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HELMINTHOLOGICAL ABSTRACTS

incorporating

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For the Year 1950

COMMONWEALTH BUREAU OF AGRICULTURAL PARASITOLOGY
(HELMINTHOLOGY)

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FOR THE YEAR 1950

Vol. 19, Part 4

255—Acta Medica Italica di Malattie Infettive e Parassitarie.

a. ANDRINI, F. & CASTRIOTA, L., 1950.—"Comportamento del potere complementare nell'anchilostomiasi." 5 (2), 31–33. [English, French & German summaries p. 33.]
b. VACCARO, U., 1950.—"La reazione di Costa negli anchilostomiasici." 5 (2), 45–47. [English, French & German summaries p. 47.]
c. VACCARO, U., 1950.—"La prova della fenolftaleina nell'anchilostomiasi." 5 (4), 101–102. [English, French & German summaries p. 102.]
d. CANNAVO, L. & CARUSELLI, M., 1950.—"L'anchilostomiasi." 5 (5), 115–122.
e. PANI, A., 1950.—"Sulla bilharziosi vescicale (studio di 114 casi)." 5 (5), 133–138. [English, French & German summaries p. 138.]

(255a) From an investigation of 20 cases of hookworm infection Andrini & Castriota find that complementary power is always more or less markedly reduced, but they do not consider it possible to establish a relation between the complementary power and the alterations in the various organs and systems. They conclude that this phenomenon is referable to changes in the physico-chemical and colloidal equilibrium of the serum. R.T.L.

(255b) Vaccaro finds that in patients with ancylostomiasis Costa's reaction is positive within 15 minutes even when some parasites still remain after treatment. R.T.L.

(255c) The phenolphthalein test was always positive in patients in whom hookworms were present and became negative when the infection was successfully eliminated. R.T.L.

(255e) During a stay of three years in oases in the Libyan Sahara, Pani studied 114 cases of urinary schistosomiasis. He attributes the infrequency of observable acute local lesions at the time of skin invasion to an attenuation of the parasite and to hereditary immunity. He considers emetine of little therapeutic value, but confirms the satisfactory results given by antimony tartrate and suggests using small doses of adrenalin with the intravenous injections to avoid intolerance. R.T.L.

256—Acta Medica Scandinavica. Supplementum.

a. ESKOLA, O., 1950.—"On the amount of urobilin excreted in urine and faeces in pernicious tape-worm anaemia and its relation to the reticulocyte crisis." 138, Suppl. 239, pp. 96–101.

(256a) [A fuller account of this paper has appeared in *Ann. Med. intern. fenn.*, 1948, 37 (1), 1–15.]

257—Advisory Leaflet. Ministry of Agriculture and Fisheries. London.

a. ANON., 1950.—"Beet eelworm." No. 233, 4 pp. [Revision of 1943 Leaflet.]
b. ANON., 1950.—"Potato tuber eelworm." No. 372, 3 pp.

258—Ärztliche Wochenschrift. Berlin.

a. REINHARD, W., 1950.—"Die Beurteilung der Oxyuriasisbehandlung mit Präparaten der Gentianaviolettgruppe mittels des Zellophanklebestreifens." 5 (13/14), 224–227.

(258a) Reinhard has carried out a series of tests to determine the efficacy of certain anthelmintics against enterobiasis: he considers that a 100% cure would mean that no

* Titles so marked throughout this number have not been seen in the original.

ova were recovered until at least 37 days after treatment—the earliest time at which re-infection could result in egg-laying. Of 99 children treated with Badil or Atrimon (gentian violet preparations) cellophane swabs showed the following percentages to be free from ova: after three days, 59%; after 20 days, 31%; after 35 days, 11%. Of 17 children given two courses of treatment with Badil the figures were: three days after the second treatment, 82% free from ova; 20 days, 63%; 35 days, 31%. Reinhard considers these figures unsatisfactory for drugs regarded as specifics. As a comparison 21 children were given Lubisan: after three days 52% were free of ova; after 20 days, 7%; and after 35 days, 0%. A.E.F.

259—Afrique Française Chirurgicale.

a. BOURGEON, R., 1950.—"Echinococcose cardio-péricardique avec embolie pulmonaire hydatique d'origine hépatique." Year 1950, No. 1/3, pp. 21–24.
b. COSTANTINI & D'ESHOUGUES, R., 1950.—"Kyste hydatique calcifié du dôme hépatique. Kystectomie par voie transpleuro diaphragmatique." Year 1950, No. 1/3, pp. 37–38.

260—Agricultural Gazette of New South Wales.

a. ANON., 1950.—"Strawberry disease prevented by quarantine vigilance." 61 (11), 568.
b. ANON., 1950.—"The warm water treatment—a means of freeing plants from certain diseases." 61 (12), 645–646.

(260a) "Dwarf" or "Crimp" disease of strawberries [? *Aphelenchoides fragariae*] unknown in New South Wales, has been detected for the first time by quarantine officers of the Department of Agriculture in plants being imported from England by a commercial firm. R.T.L.

(260b) A simple apparatus for applying to chrysanthemum crowns and daffodil bulbs the warm-water treatment for eelworms is described and illustrated. It consists of a 4-gallon kerosene tin fitted with a wooden lid and a stirrer, an accurate thermometer and a wire basket in which the plant cuttings and bulbs are stacked. The tin is raised on supports and heated by a small lamp. The water temperature is first raised above that required and allowed to cool to the exact temperature which can then be maintained by the periodical application of heat, or the tin can be lagged with dry straw and built into a box and the temperature maintained by the addition of small quantities of boiling water. Success depends on (i) holding the temperature of the water within one or two degrees of that required; (ii) the surfaces of the material must be thoroughly wet and free from air bubbles; (iii) the time of exposure must be strictly adhered to. R.T.L.

261—Agronomia. Lima.

a. CUBAS, V., R., 1950.—"La equinorrincosis porcina." 15 (61), 41–46.

(261a) In the Huánuco district of Peru, where 20% of the pigs are infected with *Macracanthorhynchus hirudinaceus* there is a definite association between the incidence of the parasite and the cultivation of certain crops, especially canes and potatoes which are attacked by the Scarabeidae larvae, *Ancistrosoma klugi* and *Ligyrus maimon*, the known intermediate hosts of *M. hirudinaceus*. After harvest the pigs are allowed to forage in the fields and so become infected. Symptoms, diagnosis and treatment are briefly summarized. P.M.B.

262—Allotment and Garden. London.

a. WESCOTT, S. A., 1950.—"Potato root eelworm." No. 83, p. 4.

(262a) Wescott gives a brief account of the methods adopted in Devonshire to assist allotment holders and other potato growers to control *Heterodera rostochiensis*. Cysts in soil samples are counted to determine whether potatoes can be grown economically or

otherwise. Soil analysis reveals in the majority of cases unbalanced conditions (high *p*H and phosphate). Manurial advice is given. Whenever new allotments are opened no material should be transferred from old sites unless all soil has been washed from the roots. R.T.L.

263—American Journal of Clinical Pathology.

a. MARKEY, R. L., 1950.—" An anal swab method for detection of *Enterobius vermicularis*." 20 (5), 493.
b. UPTON, A. C., 1950.—" Taenial proglottides in the appendix. Possible association with appendicitis. Report of cases." 20 (12), 1117–1120.

(263a) A new anal swab concentration technique for detection of the eggs of *Enterobius vermicularis* consists of an ordinary cotton swab, as used for throat cultures, dipped into a melted mixture of four parts of vaseline and one part of Parowax and allowed to cool. The swab is put into a culture tube and given to the patient who brushes it lightly over the skin surrounding the anus and then inserts it for about one quarter of an inch into the rectum. One swab is used on each of two successive mornings upon awakening and replaced in the culture tube. The tubes are half filled with xylol and allowed to stand until the wax coating is dissolved. The swab is removed and the tube centrifuged. The supernatant fluid is carefully poured off and the sediment is then examined for eggs. This technique eliminates discomfort and gives better results than the NIH swab. R.T.L.

264—American Journal of Hygiene.

a. CORT, W. W., 1950.—" Studies on schistosome dermatitis. XI. Status of knowledge after more than twenty years." 52 (3), 251–307.

(264a) Cort reviews the extensive literature of "swimmer's itch" due to schistosome cercariae. The 18 species known to produce dermatitis are tabulated with their intermediate and definitive hosts. Some have been proved by experiment, others are known to be important in the causation of natural cases. A few are included on surmise only. The pathology, immunology and clinical course are summarized. The geographical distribution of these infections, the relative importance of the different species, the significance of the different habitats and life-cycles of the intermediate hosts, their definitive host relations and those of human habits to the epidemiology of the dermatitis are discussed. The review closes with a section on prophylaxis and control, including the killing of cercariae, the protection of the human skin and the destruction of the intermediate hosts. The extensive measures carried out by the Stream Control Commission of the State of Michigan receives special notice. Many remedies have been suggested and phenolized calamine as lotion or ointment is the most widely used. R.T.L.

265—American Journal of Pathology.

a. CORDY, D. R. & GORHAM, J. R., 1950.—" The pathology and etiology of salmon disease in the dog and fox." 26 (4), 617–637.

(265a) Salmon poisoning in dogs which is conveyed by *Troglotrema salmincola* ranges from northwestern California, west of the Cascade mountains to the vicinity of Olympia, Washington. In this paper special attention is given to the symptomatology and the gross and microscopical lesions of the disease resulting from experimental feeding of dogs and foxes with infected fishes. The lesions included hyperplasia of visceral and somatic lymph nodes, sometimes with haemorrhage or necrosis, variable hyperplasia of the spleen, intestinal lymphadenoid tissue and thymus, and haemorrhage of the gastro-intestinal canal and lungs. A Rickettsia of the family Chlamydozoaceae was constantly present in the infected animals. The infection was established in mice and maintained through three passages. This is the first occasion on which a Rickettsia disease has been shown to be transmitted by trematodes. R.T.L.

266—American Journal of Tropical Medicine.

a. AUGUSTINE, D. L. & ISENBERG, H. J., 1950.—"Clonorchiasis in Caucasians living in Greater Boston." 30 (6), 871–872.
b. HUNTINGTON, Jr., R. W., EICHOLD, S. & SCOTT, O. K., 1950.—"Acute allergic filarial lymphangitis (mumu) in American troops in the Samoan area in World War II." 30 (6), 873–880.
c. RODRIGUEZ-MOLINA, R., ACEVEDO, C. E., TORRES, J. M., LOPEZ-SANABRIA, U. & RAMIREZ-RODRIGUEZ, E., 1950.—"Treatment of schistosomiasis mansoni with antimony lithium thiomalate (anthiomaline): final report." 30 (6), 881–886.
d. ABDEL-MALEK, E. T., 1950.—"Susceptibility of the snail *Biomphalaria boissyi* to infection with certain strains of *Schistosoma mansoni*." 30 (6), 887–894.
e. KENNEY, M. & HEWITT, R., 1950.—"Psychoneurotic disturbances in filariasis, and their relief by removal of adult worms or treatment with hetrazan." 30 (6), 895–899.

(266a) *Clonorchis sinensis* infection without symptoms was diagnosed by faeces examination in three Germans living in Greater Boston who had spent some years in Shanghai before entering the United States as refugees. Although the likelihood of this infection becoming endemic in the United States seems remote at present, the possibility should not be overlooked. R.T.L.

(266b) An acute transient and recurrent lymphangitis of one of the extremities, with associated funiculitis and epididymo-orchitis, was common among U.S. troops who had resided for at least four months in the Samoan area. The belief that these symptoms represent an allergic reaction to filarial protein is supported. Although further study of the larger problem of filarial pathogenicity is desirable, a comprehensive antifilarial campaign in the Pacific Islands is justifiable on the data already available. R.T.L.

(266c) Anthiomaline given in one course of 30 mg. every other day for ten injections as 3 c.c. of solution did not prove very effective in 38 mild or moderately severe chronic cases of schistosomiasis mansoni. The faeces in 22 patients became free from eggs during the course. All were negative for one to three weeks following the completion of treatment, but in 30 cases followed up for 17 months, the stools were positive in 20 (i.e. 66·6%). Slight toxic symptoms occurred in 15 of the cases. In another case a second course of 30 c.c. was given 5 months after the first but did not eradicate the infection. R.T.L.

(266d) Abdel-Malek confirms that Egyptian *Biomphalaria boissyi* are immune to infection with miracidia of the Puerto Rican strain of *Schistosoma mansoni*. Some of them become infected when re-exposed to infection with the Egyptian strain. These results support the conclusion that *S. mansoni* of different regions may be physiologically distinct forms. Dwarfed *B. boissyi* resulting from overcrowding are much less susceptible to infection and the incubation period is increased from 49–51 days compared with 28–34 days in normal specimens. *S. mansoni* eggs at 23°C. to 25°C. continue to hatch until the second day, and in a few instances as late as the third day if the culture is gradually diluted. R.T.L.

(266e) Severe psychoneurotic disturbances with apparent involvement of the central nervous system were completely relieved by surgical removal of the adults in two *Loa* cases and by treatment with hetrazan in two cases of *Wuchereria bancrofti* infection. It is suggested that systemic reactions e.g. insomnia, mental depression, irritability and severe headaches, may be caused by allergic sensitization regardless of the location of the parasite. R.T.L.

267—American Midland Naturalist.

a. MEYER, M. C. & REILLY, J. R., 1950.—"Parasites of muskrats in Maine." 44 (2), 467–477.

(267a) A complete list is given of the helminths of the musk-rat in North America. It contains 29 trematodes, 8 cestodes and 12 nematodes. The percentage of infection found by the authors in 104 musk-rats is given under each helminth species of which 7 were trematodes, 2 were cestodes and one was a nematode. An undescribed *Gongylonema* was found in the stomach wall of three musk-rats. R.T.L.

268—Anais da Academia Brasileira de Ciencias.

a. CARVALHO, J. C. M. & FEIO, J. L. A., 1950.—"Sôbre alguns gordiáceos do Brasil e da República Argentina (Nematomorpha, Gordioidea)." 22 (2), 193–206.

(268a) Carvalho & Feio describe nine species of Gordiacea including *Chordodes staviarskii* n.sp. from Rio de Janeiro, *C. carmelitanus* n.sp. from Minas Geraes, Brazil, *C. carioca* n.sp. from Rio de Janeiro and *Pseudochordodes meridionalis* n.sp. from the Argentine. The most obvious differential structures lie in the cuticle. Detailed descriptions with many photographs are given for each species. The complete life-history is not always known. The authors also give new descriptions of *C. bouvieri, C. balzani, C. brasiliensis, Neochordodes uniareolatus* and *Paragordius varius*. P.A.C.

269—Anais do Instituto de Medicina Tropical. Lisbon.

a. FRAGA DE AZEVEDO, J. & COLAÇO, A. T. F., 1950.—"Sobre a morfologia do *Schistosoma haematobium* de Portugal." 7, 7–17. [English & French summaries pp. 16–17.]
b. TRINCÃO, C., PINTO, A. R., LEHMANN DE ALMEIDA, C. & GOUVEIA, E., 1950.—"A drepanocitémia entre a tribo papel da Guiné Portuguesa." 7, 125–129. [English & French summaries p. 129.]
c. PINTO NOGUEIRA, J. F. & COITO, A. DE M. F., 1950.—"Sobre a ancilostomíase autóctona na Ilha Brava—Arquipélago de Cabo Verde." 7, 253–281. [English & French summaries pp. 279–280.]
d. COSTA MAIA, C. DA, 1950.—"Helmintas em novecentos recrutas do arquipélago da Madeira." 7, 283–323. [English & French summaries pp. 320–322.]
e. PINTO NOGUEIRA, J. & COITO, A. M., 1950.—"Relatório dos trabalhos efectuados na parte sul da Ilha de Santo Antão e na Ilha Brava." 7, 477–507.

(269a) Hamsters and apes were experimentally infected with schistosome cercariae discharged by *Planorbis dufouri* collected from endemic foci in Portugal. The measurements of eggs and adult worms obtained from these animals were compared with those of *Schistosoma haematobium* given by Girges for Egypt, Porter for South Africa and França for Portugal. The eggs from Portugal were a little larger than those from Africa and the terminal spine was shorter but the adult worms obtained from these experiments were smaller. Male and female worms from the hamsters were larger than those collected from the apes. R.T.L.

(269b) Hookworm disease occurs in 92·3% of the native population of the island of Bissau in Portuguese Guinea. R.T.L.

(269c) Of the Cape Verde Islands, Santo Antão Island is lightly infected with hookworm, only one case having been found whereas Brava Island is considerably infected (37·8%). There is a great variety in the incidence in different localities and at different altitudes. The local disease called "Mund foot" is probably associated with the penetration of hookworm larvae through the skin of the feet. R.T.L.

(269d) Of 910 military recruits in the archipelago of Madeira, 88·02% were infected with helminths. The incidence of the various species was: Trichuris 74·28%, Ascaris 67·36%, hookworm 23·29%, *Hymenolepis nana* 1·32%, Strongyloides 0·55%. A map shows a strikingly higher infection with hookworm on the north of the island which is attributed to climatic and other circumstances. Eight of the twelve individuals parasitized by *H. nana* lived in the urban parish of Santa Maria Maior. R.T.L.

(269e) Examination of the faeces of 1,222 persons on the Island of Brava, Cape Verde Islands, gave the following incidence of helminth infections: hookworm 37·8%, Ascaris 71%, Trichuris 76·6%. A few infections with Trichostrongylidae, *Enterobius vermicularis, Hymenolepis diminuta* and *H. nana* were also observed. Sixty-six persons showing hookworm eggs passed *Necator americanus* after treatment with carbon tetrachloride. Of 462 persons who had never left the island, 93·7% were hookworm carriers. R.T.L.

270—Anais Paulistas de Medicina e Cirurgia.

*a. FORATTINI, O. P., 1950.—"Parasitoses intestinais; nota sôbre as variedades observadas na 4. enfermaria de cirurgia de homens do Hospital Central da Santa Casa de Misericórdia de S. Paulo." 59 (3), 307–310.

271—Anales del Instituto de Medicina Regional. Tucumán.

a. NÁJERA, L. E. & MAYER, H. F., 1950.—"Hallazgo de la fase larvaria de *Echinococcus granulosus* en la corzuela (*Mazama simplicicornis*) y consideraciones sobre la epidemiología de esta helmintiasis." 3 (1), 1–9. [English summary p. 8.]

b. ROMAÑA, C. & WYGODZINSKY, P., 1950.—"Acerca de la transmisión de *Mansonella ozzardi* (Manson) (*Filaria tucumana* Biglieri y Aráoz)." 3 (1), 29–34. [English summary p. 34.]

c. TORANZOS, Jr., L. B., 1950.—"Contribución al estudio biométrico de microfilarias de perros de Tucumán." 3 (1), 39–44. [English summary pp. 43–44.]

(271b) *Filaria tucumana* is considered to be identical with *Mansonella ozzardi*. Although experimentally infected *Culicoides* sp. died under laboratory conditions after the second larval stage of the microfilariae had been reached, the initial experimental infection was so successful (35·3%) that *Culicoides* sp. is considered the vector of *M. ozzardi* in northern Argentina. P.M.B.

(271c) Like earlier observers in the Argentine, Toranzos has experienced great difficulty in finding the adult worms in dogs with considerable numbers of microfilariae in the blood. From a detailed study of the microfilariae from eight dogs he is of the opinion that they are all of the same type. R.T.L.

272—Animal Health Leaflet. Ministry of Agriculture and Fisheries. London.

a. ANON., 1950.—"Stomach worms in cattle." No. 42, 3 pp.

273—Annales Médico-Psychologiques.

a. FOUKS, L., CLANCIER-GRAVELAT & VIARD, 1950.—"Psychoses aiguës et ascaridiose." 108 (4), 473–476.

274—Annales de Parasitologie Humaine et Comparée.

a. COUTELEN, F., RAZEMON, P. & BIGUET, J., 1950.—"La longévité des échinocoques. Étude critique à propos d'un kyste hydatique de la rate évoluant depuis plus de vingt-trois ans." 25 (4), 267–275.

b. DOLLFUS, R. P., 1950.—"Hôtes et distribution géographique des cercaires cystophores." 25 (4), 276–296.

c. BUTTNER, A., 1950.—"Labilité particulière du sexe chez *Schistosoma mansoni* (Plathelminthe, Trématode). Essai d'interprétation." 25 (4), 297–307.

d. CAMPANA, Y. & CHABAUD, A. G., 1950.—"Note sur quelques nématodes africains collection Camille Desportes." 25 (4), 308–324.

e. CHABAUD, A. G. & CAMPANA, Y., 1950.—"Nouveau parasite remarquable par l'atrophie de ses organes: *Robertdollfusa paradoxa* (Nematoda, Incertae sedis)." 25 (4), 325–334.

f. CHABAUD, A. G., CAMPANA, Y., TRUONG-TAN-NGOC, 1950.—"Note sur les dracunculides d'oiseaux." 25 (4), 335–339.

g. JOLIVET, P. & THÉODORIDÈS, J., 1950.—"Les helminthes parasites de coléoptères chrysomélides." 25 (4), 340–349.

h. CALLOT, J. & VERMEIL, C., 1950.—"Phagocytose péritonéale des helminthes et de leurs oeufs." 25 (5/6), 370–375.

i. BUTTNER, A., 1950.—"La progénèse chez les trématodes digénétiques. Sa signification. Ses manifestations. Contributions à l'étude de son déterminisme." 25 (5/6), 376–434.

j. CHABAUD, A. G. & CAMPANA, Y., 1950.—"Note sur le genre *Hadjelia* Seurat 1916 (Nématodes-Spiruridae)." 25 (5/6), 435–440.

k. GALLIARD, H., 1950.—"Recherches sur l'infestation expérimentale à *Strongyloides stercoralis* au Tonkin (Ire note)." 25 (5/6), 441–473.

(274a) In 1949 a fertile hydatid cyst was removed from the spleen of a Turkish woman aged 65. She had left Turkey in 1920 and since then had lived in the north of France. As hydatid in man is rare there and is common in Turkey, it is concluded that the hydatid was 29 years old. Earlier records are quoted from the literature. R.T.L.

(274b) The 40 species of cystophorous cercariae hitherto recorded are listed, with brief comments, under their molluscan hosts; of these 39 are gastropods and one is a scaphopod. Little is known of the morphology and life-history of many of them. Dollfus is now of the opinion that all of them are cercariae of Hemiuroidea. Their number is small compared with the large number of adult hemiurids already described. The young Sterrhurinae which occur encysted in the organs of various teleostean fishes have hitherto been considered to be progenetic metacercariae containing eggs. It is now suggested that they are adult forms which have wandered from their normal habitat in the gut into the surrounding tissues where they have become encapsulated and that the cyst wall has been produced by the host and not by the parasite. R.T.L.

(274c) Buttner reviews the contributions dealing with hermaphroditism observed in African strains of *Schistosoma mansoni*, and notes that this phenomenon occurs in appreciable percentages only in certain experimental hosts, particularly the hamster, guinea-pig and rabbit, infected by male cercariae only. In her experiments, using guinea-pigs exposed to cercariae of both sexes, the males became hermaphrodites in spite of the presence of almost an equal number of females. Mice exposed to cercariae of the same strain of *S. mansoni* yielded only normal males and females and this is accepted proof that the hosts are responsible for the sexual abnormalities. The presence of an ovary in the male schistosome coincides generally with a diminution in the number of testes. This development of the ovary has an inhibitory influence on the male sex organs and renders them incapable of fertilizing the females. Sex determination probably depends on the genetic constitution of the germ cells but the differentiation of the gonads can only be accomplished under the complex biological influence of the definitive host. The degree of hermaphroditism that occurs in any host is the result of the interaction of these two factors. P.L.leR.

(274d) A collection of helminths made on the Ivory Coast and in Togoland by the late C. Desportes contained six species of which two from the Ivory Coast are described as new, viz. *Kalicephalus bitisi* n.sp. from *Bitis gabonica* which is nearly related to *K. viperae*, and *Spirura portesiana* n.sp. from *Xerus rutilus*. Examination of specimens of *Theileriana brachylaima* shows that *T. denticulata* is a synonym. The subfamily Hoplodontophorinae is amended. R.T.L.

(274e) *Robertdollfusa paradoxa* n.g., n.sp. is a remarkable nematode, 5·1–5·7 mm. long, which has been collected from the anterior chamber of the eye of *Corvus corone*. As the total absence of characteristic structures and especially the absence of oesophagus and of cephalic papillae renders its classification uncertain, it is placed in a new family of Spirurida named Robertdollfusidae. Females only have been found. The vulva is 3·1 mm. from the anterior end. The uterus is a long sac containing 90–150 embryos, 900μ by 7·3μ. The digestive, sensory and muscular systems are atrophied. In many respects the worms resemble *Muspicea borreli* but approach more nearly to the Mermithidae as the musculature is holomyerial and the cuticle is smooth. R.T.L.

(274f) *Oshimaia taiwana* is a guinea-worm which causes fibrous sub-mandibular swellings in domesticated ducks in the Far East. A study of specimens from Cholon in south Viet Nam shows that the characters upon which Sugimoto based the genus *Oshimaia* were due to errors of observation and that this genus is a synonym of *Avioserpens*. Although four species of *Avioserpens* have been named, the male of *A. galliardi* alone has been described. The females do not reveal any specific characters by which they can be differentiated. *A. denticulophasma*, *A. galliardi* and *A. multipapillosa* may become synonyms of *A. taiwana* but the authors think it preferable to await the discovery of the males before they are treated as such. R.T.L.

(274g) As a contribution to our knowledge of the parasites of Coleoptera, Jolivet & Théodoridès have compiled brief notes and a table giving the helminths which have been recorded from the Chrysomelidae s.str., Galerucidae and Halticidae. It is remarkable that only 16 out of more than 25,000 species of Chrysomelidae have so far been reported as hosts of helminths. The nematodes belong principally to *Hexamermis* and *Howardula*. *Parachordodes violaceus* is the only gordiacean mentioned. Metacercariae of *Brachylecithum americanum* resulted from experimental infections. R.T.L.

(274h) Callot & Vermeil performed three sets of experiments on the peritoneal phagocytosis of helminths and their eggs in guinea-pigs and rats. Living female *Ascaris suum* introduced into the peritoneum were destroyed with, and in one case without, encapsulation. The introduction of dead *Ascaris* was tolerated but after a period of three months the introduction of a living *Ascaris* into the same animal caused death. No development of *Ascaris* eggs appeared to take place in the peritoneum and the eggs of *Fasciola hepatica* and *Taenia saginata* were ingested by phagocytes. S.W.

(274i) Buttner defines and discusses progenesis and compares it with neoteny. She finds that in *Paralepoderma* (=*Plagiorchis*) *brumpti* the life-cycle can be completed experimentally without a definitive host; that in *Ratzia joyeuxi* the metacercaria is always progenetic and that *Pleurogenes medians* can be kept in the laboratory in a new intermediate host, the larva of *Sialis lutaria*, in which the metacercaria produces eggs. *R. parva*, *Paralepoderma progeneticum*, *Cortacaecum* sp. and *Astracotrema cirrigerum* were also studied. Buttner gives a detailed and illustrated account of those progenetic metacercariae and cercariae already known. She concludes that the four species *Proterometra macrostoma*, *P. hodgesiana*, *P. catenaria* and *P. sagittaria* are all valid. [See also Helm. Abs., **19**, Nos. 5a, 17a.] S.W.

(274j) From a study of the cephalic structures described for the various species of *Hadjelia* the characters of this genus are redefined and the genus *Excisa* is retained. *H. inermis* is considered to be a synonym of *H. truncata*. R.T.L.

(274k) Galliard has studied *Strongyloides stercoralis* from 19 individuals from Indo-China, one from Africa, one from the Antilles and three natural infections in dogs. In culture he finds no difference between those made from the contents of the duodenum and the rectum. The proportion of larvae in the cultures undergoing direct development to those becoming sexually mature remains the same for one individual at different intervals but after treatment the proportions are altered. In 12 cases out of the 21, direct development predominated and in four cases direct development only occurred; in one case indirect development only occurred. Galliard finds that the proportion of larvae in cultures of the human strains can be altered by repeated passage through dogs, the numbers of sexual individuals being greatly increased. In one of the natural infections in dogs the proportions remained unchanged after several passages through other dogs. From this he concludes that this one only is a race of *Strongyloides* peculiar to dogs. Dogs are resistant to some foreign strains indicating the existence of different geographical and biological races. Experiment showed subcutaneous infection to be the most effective in dogs and cats. The migrations of the larvae were traced by killing animals at intervals from 21 hours to seven days. In the dog the period of incubation is from 9–13 days with 8,000 larvae, but may be 20–35 days with 100–500 larvae. Infection with up to 2,000 larvae was tolerated, but the length of survival depended on the physiological state of the animal; an infection with 8,000 larvae caused death in 13–20 days, although one dog survived 29 days. If after infection with a given number of larvae the number of larvae per gm. of faeces is plotted against the number of days, the curves are strikingly irregular. There may be long latent periods in feeble infections, as in man, which may be due to the rhythm of oviposition. Infections were obtained with a minimum of five larvae. The number of females in the intestine attains a fixed number depending on the source and number of larvae and the

site of infection. The infectivity of a strain may, or may not, be lessened by repeated passage through dogs and appears to be unrelated to the type of exogenous development. There appears to be a close relationship between the infectivity of a given strain and the average fecundity of the rhabditiform females. The intensity of human infection with a particular strain agrees closely with the infectivity in experimental animals. This indicates that the degree of infection corresponds not only with the number of larvae to which man is exposed but also to the infective ability of the strain. S.W.

275—Annales Universitatis Mariae Curie-Skłodowska, Lublin.

a. RUSZKOWSKI, J., 1950.—" Fauna roślinożerna łanów zbożowych w Polsce w okresie dwudziestolecia 1919–1939." Suppl. II, Sectio E, 95 pp. [English summary pp. 91–92.]

(275a) Although *Ditylenchus dipsaci*, probably widely distributed, has been overlooked in Poland, the changes in affected plants were observed a long time ago. In 1873 Nowicki recognized that a disease in wheat was caused by nematodes which he identified as *Anguillula* sp. According to unpublished observations by Piekielniak, eelworm caused 1%–80% damage to the harvest in Sygontki, a district of Częstochowa, in 1934. At Morgonin, a district of Chodziez, a field of about 12 acres of rye was completely ruined in 1936, according to Ginter. The economic importance of this and possibly other species is increased by its polyphagous habits and by the distribution of diseased plants. The possibility of the infection being imported in bulbs has led to this species being placed on the quarantine list which requires certificates from importers that the bulbs are free from infection. The occurrence of *Anguina tritici* is quite unknown apart from Ruszkowski's own discovery in 1930 of its presence in wheat grains in a garden in Warsaw. The belief prevalent among farmers in Poland that barley should not be sown after diseased beets suggests that *Heterodera major* and *H. schachtii* may both be present in the soil. R.T.L.

276—Annali di Radiologia Diagnostica.

a. CONGIU, A., 1950.—" Segni radiologici diretti d'idatide epatica." 22 (1), 74–80.

277—Annali della Sanità Pubblica. Rome.

a. BOARI, D., 1950.—" Alcuni rilievi e ricerche sullo stato attuale delle parassitosi intestinali con particolare riguardo all'anchilostomiasi nel territorio del comune di Cremona." 11 (2), 459–497.
b. SOLETTA, L., 1950.—" Osservazioni e ricerche sulla presenza della anchilostomiasi nella provincia di Parma." 11 (2), 499–513.

(277a) The number of cases of ancylostomiasis due to *A. duodenale* which were reported in Italy between 1934 and 1947 are tabulated under each year and province. In the town and province of Cremona, little attention has been given to the disease in ordinary medical practice although the incidence of intestinal helminthiasis, including ancylostomiasis, is stated to be high. R.T.L.

(277b) In the Province of Parma 49 cases of ancylostomiasis were registered between 1889 and 1919. Between 1909 and 1942 five cases were recorded in the books of the local general hospital. Twenty-eight cases are now reported in individuals working on vegetable farms in Valera. Those examined in other zones were negative. R.T.L.

278—Annals of Applied Biology.

a. JONES, F. G. W., 1950.—" Observations on the beet eelworm and other cyst-forming species of *Heterodera*." 37 (3), 407–440.

(278a) Jones gives the results of observations on the bionomics and morphology of seven cyst-forming species of *Heterodera*. A large number of plants in the field were tested for their ability to act as hosts to beet, potato, pea, carrot and *Galeopsis* root eelworms and pot tests were made with the cruciferous and hop root eelworms. The criterion of

susceptibility was the formation of cysts. Beet eelworm (*H. schachtii*) attacked 60 plants in eight different families, 29 in Cruciferae alone. The *Galeopsis* eelworm attacked 11 plants in five families. *H. rostochiensis* attacked only potato, tomato and *Solanum dulcamara*. *H. göttingiana* attacked five plants, all in Leguminosae. *H. carotae* attacked only carrot and wild carrot. *H. cruciferae* attacked only crucifers and *H. humuli* attacked only hops and nettles (*Urtica dioica* and *U. urens*). The rates of development throughout the year of cysts of beet, potato, pea and carrot eelworms in the field were similar and were greatest in summer. With adequate moisture the maximum number of generations of all four species was between two and three per year, and depended on the vegetative period of the host. Diagrams illustrate the variations in size and shape of the cysts of eight species (including the cereal root eelworm). Observations were made on the cyst colour and numbers of eggs extruded into the gelatinous egg sac in these species. It is suggested that size ranges and regression coefficients are more valuable criteria than average lengths and breadths and length-breadth ratios of cysts. *H. carotae* is fully described and reasons are given for considering *H. schachtii* var. *galeopsidis* Goffart, 1936 a distinct species, *H. galeopsidis*. M.T.F.

279—Annals of Tropical Medicine and Parasitology.

a. GRIFFITHS, R. B., 1950.—" A review of the incidence of *Cysticercus bovis* in cattle in Great Britain, together with a consideration of some aspects of *Taenia saginata* infection in man." 44 (4), 357–360.
b. KERSHAW, W. E., 1950.—" Studies on the epidemiology of filariasis in West Africa, with special reference to the British Cameroons and the Niger delta. I.—Methods of survey for infections with *Loa loa* and *Acanthocheilonema perstans*." 44 (4), 361–378.

(279a) During a three month period ending mid-June 1949, Griffiths found *Cysticercus bovis* in 132 (1·86%) out of 7,083 cattle slaughtered at Stanley Abattoir in Liverpool. The overall figures for the period 21st March to 21st October 1949 were 503 (1·9%) out of 26,439 cattle slaughtered. Unfortunately there is very little information on the incidence of *Taenia saginata* in man in Great Britain. Its incidence is higher in women than in men. Seaton, in a personal communication to the author, states that out of nine autochthonous cases of taeniasis seen at the Liverpool School of Tropical Medicine since 1945, seven occurred in women. This may be due to the fact that cysticerci tend to adhere to the hands during the preparation of infected meat in the kitchen. R.T.L.

(279b) Kershaw points out that our knowledge of the vectors which transmit the various filariae of man in West Africa is still very limited. Diagnosis of *Loa loa* by serological methods is unsatisfactory as no antigen is sufficiently specific to distinguish it from other filarial infections. Reliance can be placed only on identification of the circulating microfilariae or, less often, of the adult worms. It was found that the maximum proportion of positive infections was obtained by examining films made from 50 c.mm. of blood taken from the finger in a pipette. The films were dried, dehaemoglobinized, dried again, fixed in spirit, again dried, then stained in hot Mayer's haemalum for 3–5 minutes and washed for an hour. The results obtained are compared with those from the same individual by Knott's method. The rise and fall in the numbers of microfilariae in the blood of nine prisoners in Kumba gaol coincided with dawn and dusk, reaching their maximum for five or six hours about noon. Only in a very low infection were they absent during the four hours about midnight. The microfilariae of *Acanthocheilonema perstans* showed little tendency to periodicity. Infection with *Loa loa* is maintained by a parsimonious mechanism of high intensity, that of *A. perstans* by a profligate one of low intensity. R.T.L.

280—Anzeiger für Schädlingskunde.

a. KOTTHOFF, P., 1950.—" Kartoffelschäden durch *Ditylenchus*." 23 (7), 107–108.
b. SACHS, H., 1950.—" Zur Wirkung von E 605f auf Blattälchen." 23 (8), 117–118.

(280a) Kotthoff describes the symptoms of attack by *Ditylenchus dipsaci* on potato shoots and tubers. On the former, leaf petioles and their main nerves are chiefly affected

and show much stunting and thickening. In the tubers, *D. dipsaci* gives rise to conical pits of affected tissue over which the skin splits. This is a different picture from that presented by attack caused by the tuber eelworm *D. destructor*, the incidence of which is confined more to the surface areas of the tubers and does not infest the stems or leaf petioles. Kotthoff has found cases of *D. destructor* attack in Westphalia and reports on pot experiments which show that the rye race of *D. dipsaci* does not infest potatoes. He mentions the occurrence of a rather polyphagous race of *D. dipsaci* with which he has worked in Germany which was able to attack beets strongly and also, to a lesser degree, maize, carrots, cucumber, hemp, lupins and flax. He recommends the use of crop rotations for the control of *D. destructor*. T.G.

(280b) Sachs tested E605f, a preparation containing 70% active E605, against the leaf eelworm of ferns, *Aphelenchoides fragariae* (formerly known as *A. olesistus*). Infected parts of fern leaves were covered with pieces of filter paper soaked in E605f solutions of 0·05%, 0·025% and 0·01%, the solutions being renewed on the two subsequent days. Other infected leaves were painted with the solution thrice daily for three days. In no case did eelworms extracted from the leaves show injury. This is attributed to the wax coating on the leaves which absorbed the chemical, hindering its entry into the leaves, and to the decomposition by ferments, formed in the protoplasm, of any of the substance which did enter. When an infected leaf was painted four times daily for 37 days with 0·05% E605f, the parasites were destroyed within 14 days and still no eelworms were present after six weeks. It is recommended that plants with a thick wax layer be sprayed one to three times daily for seven days with 0·025–0·05% solution. The effect of placing leaf eelworms directly in solutions of E605f was to cause a typical form of paralysis resulting after a time in death, shown by the straightening of the nematodes. The lethal threshhold seemed to lie approximately at a concentration of 0·01% for 24 hours. Sublethal doses caused typical paralysis from which recovery was possible when the worms were removed to pure water. A few nematodes survived long exposure to the insecticide from which it is deduced that, if their resistance is inherited, an E605-resistant strain of aphelenchs could arise. The youngest larvae succumbed first in the chemical : females were observed to lay eggs in E605 solutions ; larvae hatched apparently normally but soon succumbed. The chemical seems to affect the nervous system, causing muscular cramp, but whereas in insects this quickly leads to complete immobility, in nematodes movement is not altogether stopped, though it becomes extremely slow. M.T.F.

281—Archives de Zoologie Expérimentale et Générale.

a. BOBIN, G., 1950.—" Sur les cellules à sphérules colorées et leur parenté avec les cellules adipeuses chez *Glossosiphonia complanata* L. (Hirudinée Rhynchobdelle)." Notes et Revue No. 2, 87 (2), 69–94.

282—Archivio Italiano di Chirurgia.

a. DERIU, F., 1950.—" Contributo alla conoscenza della idatidosi polmonare secondaria broncogenetica." 73 (1), 17–32.

283—Archivio Italiano di Scienze Mediche Tropicali e di Parassitologia.

a. LIPPI, M., 1950.—" Nuove ricerche sull'eosinofilia midollare nell'echinococcosi." 31 (2), 93–106. [English, French & German summaries pp. 105–106.]
b. PANSINI, R. & PIRASTU, C., 1950.—" Rivista sintetica di aggiornamento biologico-morfologico-etiopatogenetico sulla malattia idatidea." 31 (2), 107–167.

(283a) Even when the complement fixation test was negative and there was no haemal eosinophilia the bone marrow constantly showed an eosinophilia in 37 persons with Echinococcus cysts. This was the more obvious when the eosinophils were calculated as a percentage of the myeloblasts only. R.T.L.

284—Arquivos do Instituto Biologico. São Paulo.

a. PEREIRA, C., MELLO, M. J. DE & CASTRO, M. P. DE, 1950.—"Reação tissular às larvas de *Habronema muscae* (Carter) no decorrer de uma esponja experimental em cavalo." Year 1949–50, 19, 275–282. [English summary p. 280.]

(284a) A study of summer sores produced experimentally in a horse by *Habronema muscae* showed that there was initially an acute inflammatory exudation consisting chiefly of neutrophilic polymorphonuclear leucocytes in the superficial portion and of eosinophils in the deeper portion of the lesion. Later, giant cells removed the necrotic cells and the remains of the dead parasites which were destroyed in about seven days. This probably explains the scarcity of larvae in naturally acquired summer sores. Granulation tissue repaired the damaged skin. R.T.L.

285—Australian Journal of Agricultural Research.

a. STEWART, D. F., 1950.—"Studies on resistence of sheep to infestation with *Haemonchus contortus* and *Trichostrongylus* spp. and on the immunological reactions of sheep exposed to infestation. III. The antibody response to infestation with *Trichostrongylus* spp." 1 (4), 413–426.

b. STEWART, D. F., 1950.—"Studies on resistence of sheep to infestation with *Haemonchus contortus* and *Trichostrongylus* spp. and on the immunological reactions of sheep exposed to infestation. IV. The antibody response to natural infestation in grazing sheep and the 'self-cure' phenomenon." 1 (4), 427–439.

(285a) Continuing his studies [see also Helm. Abs., 19; Nos. 160a & b] on helminth immunity Stewart has found a striking difference between the response of *Trichostrongylus* spp. and *Haemonchus contortus*. Both larvae and adult worms stimulated the production of antibodies in sheep infected with *Trichostrongylus* spp., whereas only intake of larvae had a corresponding stimulus with *H. contortus*. Antibody response to *Trichostrongylus* spp. began later and, in sheep which survived, persisted longer than antibody response to *H. contortus*. Circulating antibodies disappeared from the serum of sheep which succumbed to infection by *Trichostrongylus* spp. There was usually a decline in egg count as the titre of antibody increased. Older sheep responded more vigorously and earlier than young sheep. The resistance of older sheep was attributable, at least in part, to an earlier immunological response strengthened by subsequent exposure to reinfection. A previous infection with *H. contortus* did not result in resistance to *Trichostrongylus* spp., but a previous Trichostrongylus infection increased resistance to reinfection by the same species. "Self-cure" occurred when a dose of *Trichostrongylus* spp. larvae was given to sheep already harbouring infections with these species, and development of the superimposed larvae was resisted, (c.f. "self-cure" and *H. contortus* where the superimposed larvae usually develop and may produce a fatal infection). A dose of *Trichostrongylus* spp. larvae did not cause "self-cure" when given to sheep infected with *H. contortus*. Some sheep in which *Trichostrongylus* spp. failed to become established did not show a serological response. It appears that the resistance of these sheep was not due to an immunological response as measured by a complement fixation test. H.MCL.G.

(285b) Complement fixation tests were carried out weekly for eighteen months on sera from a number of sheep used in epidemiological studies in the field and exposed to the seasonal fluctuations in worm burdens uncomplicated by any form of control measures. Weekly egg counts and differential larval counts from faecal cultures were made. There was an inverse relationship between the titre of circulating antibody and the egg count. The relationship was particularly clear during the summer months when *H. contortus* was the commonest parasite, but was also seen in the winter when *Trichostrongylus* spp. were largely responsible for the egg counts. The rise in antibody accompanying the fall in egg count was clearer in individual sheep than in the flock as a whole because some animals did not always show the relationship. Antibody levels changed in individual sheep irrespective of the level of infection, even lightly infected sheep showing the response. Seven periods of "self-cure" occurred in the flock during the eighteen months of the study,

and on each occasion the majority of sheep (including 9 animals eight years old and 23 young sheep one year old when the study began) which showed a drop in egg count, showed a rise in titre of antibody. "Self-cure" was produced in another flock in the field by giving sheep 13,000 to 39,000 *H. contortus* larvae in single doses. There were statistically significant falls in the egg counts of *H. contortus* and *Trichostrongylus* spp. but not of *Oesophagostomum columbianum*. Changes in a group given repeated doses of 1,000 larvae during several weeks were difficult to interpret. In the grazing flocks there was no evidence that permanent resistance to *H. contortus* was acquired in the field. "Self-cure" did not confer protection. In many cases the dose of larvae which stimulated the loss of the existing infection developed to maturity themselves, but at times they did not. The association of the loss of infection with a rise in antibody indicated that there was an immunological reaction concerned in "self-cure". That "self-cure" took place in grazing sheep in the summer months after rain indicated that the intake of large doses of infective larvae of *H. contortus* was the exciting cause. It is concluded that sheep can acquire a relatively strong resistance against *Trichostrongylus* spp., but are unable to acquire an appreciable resistance against *H. contortus*. Reactions to infection produce antibody which can be detected by a complement fixation test. Rise in titre of antibody subsequent to accession of larvae, either by dosing or ingestion by grazing, is associated with the "self-cure" phenomenon. While there is no direct evidence that the "self-cure" phenomenon is immunological, it is significant that when "self-cure" does not take place, there is no rise in circulating antibody. There was no evidence of an age resistance to *Trichostrongylus* spp. unaccompanied by an antibody response. It appears that the presence of circulating antibodies gives some measure of the reaction of the host. In the "self-cure" phenomenon, the reaction of the host is unfavourable to the established infection and can be measured by the sudden elimination of the worms. The reaction of the host to *Trichostrongylus* spp. is accompanied by a reduction in worm burden and resistance to subsequent infections. H.MCL.G.

286—Australian and New Zealand Journal of Surgery.

a. WADDLE, N., 1950.—" Pulmonary hydatid disease. A review of 478 cases reported in the Louis Barnett hydatid registry of the Royal Australasian College of Surgeons." **19** (4), 273–290.

(286a) A study of the records of 478 cases of pulmonary hydatid disease in Australia and New Zealand shows that it is still very prevalent in sheep farming areas. Diagnosis is difficult except where hydatid material occurs in the sputum. Reliance has to be placed on complement-fixation and Casoni tests but these combined give only 36% positive reactions. X-ray will usually establish a diagnosis unless obscured by associated pleural effusion and other types of pulmonary lesions. The formation of daughter cysts is relatively rare. The essentials of surgical management are summarized. R.T.L.

287—Beretning om Landboforeningernes Virksomhed for Planteavlen paa Sjaelland.

a. FREDERIKSEN, H., 1950.—" Undersøgelser og Forsøg over Kløveraalens Udbredelse, Skadevirkning, Smitteforhold og Bekaempelse." Year 1949, pp. 245–279.

(287a) During 1949, 846 farms with 1,888 leys in different parts of Denmark have been investigated for the occurrence of eelworm on red clover, white clover and lucerne. 50% of the red clover leys and 17% of the white clover leys were infected. There was a good correlation between the eelworm attacks and the age of the leys but none between the attacks and the moisture and lime content of the soil and the manuring. Red clover eelworm seems to be most common in clay soils but white clover eelworm has the same frequency in all types of soil. The attacks were more widespread in rough fields than on level ground and seemed to be most widespread on grazed fields. Crop rotation was of great importance ; the attacks were not so common when several years had intervened

since the last clover crop was harvested. Different strains of white clover and red clover showed important differences in resistance. The Swedish red clover strains Merkur and Resistenta were more resistant to red clover eelworm than tested Danish strains. English wild white clover and some strains derived from this were rather resistant to white clover eelworm. Also Lodi, a Ladino clover, was rather resistant. Experiments have shown that red clover eelworm attacks red clover and, to a very limited extent, also alsike clover but not white clover, lucerne and some other leguminous plants. White clover eelworm attacks white clover and to some extent alsike clover but not red clover, lucerne and other leguminous plants. Lucerne eelworm attacks lucerne and *Melilotus albus* but no other tested leguminous crops. The eelworm attack on *Melilotus* has not been found previously in Denmark. S.B.

288—Berliner und Münchener Tierärztliche Wochenschrift.

a. JACOB, E., 1950.—" Parasitologische Notizen. 17. Pansenegel-Befall (*Paramphistomum cervi*) bei einem Schaf." Year 1950, No. 12, p. 268.

(288a) The faeces of a ewe at Oldenburg contained a large number of eggs of *Paramphistomum cervi*. No other helminths were present. The administration of two tablets of phenothiazine, 5·0 gm. each, counteracted the diarrhoea and reduced the infection. *Planorbis* sp. were present in great numbers in a nearby ditch and were probably the intermediate host. R.T.L.

289—Biological Bulletin.

a. VON BRAND, T., BAERNSTEIN, H. D. & MEHLMAN, B., 1950.—" Studies on the anaerobic metabolism and the aerobic carbohydrate consumption of some fresh water snails." 98 (3), 266–276.
b. STUNKARD, H. W., 1950.—" Further observations on *Cercaria parvicaudata* Stunkard and Shaw, 1931." 99 (1), 136–142.

(289b) Stunkard gives a detailed account of the morphology of *Cercaria parvicaudata* and of its sporocysts, from *Littorina littorea* and *L. saxatilis*. The flame-cell formula of the mature cercaria is $2(3+3+3) + (3+3+3)$. He is of the opinion that physiological conditions induce the formation of new flame cells from undifferentiated mesenchyme cells. The cercariae will penetrate and encyst in excised parapodia of *Neanthes virens*, in *L. saxatilis*, *L. littorea* and *L. obtusata*. The cysts are 0·1–0·15 mm. in diameter. There is a row of 12–15 spines on each side of the mouth of the metacercaria. Except for the difference in colour of the sporocysts, *C. parvicaudata* and *C. roscovita* are almost identical. They are unique in that the excretory collecting ducts open into the stem of the excretory vesicle. Both species are probably Plagiorchiidae. The definitive host of *C. parvicaudata* is probably a sea-shore bird or mammal. R.T.L.

290—Boletín de la Asociación Médica de Puerto Rico.

a. RODRÍGUEZ-MOLINA, R., ACEVEDO, C. E., TORRES, J. M., LÓPEZ-SANABRIA, U & RAMÍREZ-RODRÍGUEZ, E., 1950.—" Rectal biopsy as a criterion for evaluation of treatment in schistosomiasis mansoni." 42 (7), 415–418.
b. MÉNDEZ POLO, C. A. & DOBAL, J. M., 1950.—" Treatment of some hepatic disorders with necroton. (Preliminary results with report of cases.)" 42 (8), 495–499.

(290a) From a study of 29 Puerto Ricans with schistosomiasis mansoni, the authors found that examination of the faeces was a more reliable method than rectal biopsy in evaluating the effectiveness of treatment with anthiomaline. One course of 30 c.c. of this drug did not prove very effective in mild, asymptomatic or moderately severe chronic infections as revealed by rectal biopsy. R.T.L.

(290b) Marked improvement in physical condition followed the administration of "Necroton" to three patients suffering from chronic schistosomiasis mansoni. Two of the patients received intramuscular injections of 5 c.c. of Necroton daily for 30 days. Gastro-intestinal disturbances disappeared on the fifth day. A third patient received 2 c.c. daily

for 13 days and 5 c.c. daily for a further 25 days. Necroton is the trade name for an anti-necrotic material prepared from liver and protects the liver from the effect of toxic agents. It has a high content of xanthine. R.T.L.

291—Boletín de Informaciones Parasitarias Chilenas.

a. ANON., 1950.—" Profilaxis de la hidatidosis." [Editorial.] 5 (3), 29.
b. ANON., 1950.—" Campañas antiparasitarias en Chile." 5 (3), 34–35.
c. NEGHME, A., BERTÍN, V., DONCKASTER, R., SILVA, R., ARTIGAS, J., BUNSTER, A., MUÑOZ T., F., FAÚNDES, A. & BASSO, B., 1950.—" *Diphyllobothrium latum* en Chile. III.—Nuevas encuestas coprológicas en el sur del país y comprobación de un caso autóctono en Santiago." 5 (4), 42. [English summary p. 42.]
d. BOERO H., M., 1950.—" Frecuencia de la localización hepático-pulmonar y fertilidad de los quistes hidatídicos en vacunos, ovinos y porcinos." 5 (4), 43–44. [English summary p. 44.]
e. FAIGUENBAUM, J. & DONCKASTER R., R., 1950.—" Las teniasis y su tratamiento." 5 (4), 45–48.
f. ANON., 1950.—" Campañas antiparasitarias en Chile." 5 (4), 48–49.

(291b) In the region of Lake Colico (lat. 39°20'S.) the faeces of a number of dogs treated with arecolin hydrobromide showed that 50% were infected with *Taenia echinococcus*. Fourteen cases of trichinosis occurred in Santiago between July and September. An examination of 1,082 persons revealed seven cases of *Diphyllobothrium latum*. In the Isla de Chiloé, in the province of Tarapacá, of 4,844 persons 2,560 were found to harbour Enterobius. R.T.L.

(291c) *Diphyllobothrium latum* eggs have been found in the faeces of 9 out of 797 inhabitants of the Arauco and Cautín provinces of Chile and an indigenous case is reported from Santiago City. The total number of recorded cases of human infections in Chile is now twelve. R.T.L.

(291e) The acridine drugs Atebrin and "Metoquina" cured 44 out of 56 cases of infection with the larger tapeworms (*Taenia saginata*, *T. solium* and *Diphyllobothrium latum*) whereas "Priodax" (Schering) cured only 26 out of 68 cases. Of 17 cases with *Hymenolepis nana* all were cured by the acridines whereas "Priodax" failed in the three cases in which it was tested. The acridine drugs were usually well tolerated but treatment failed where vomiting occurred soon after their administration. Treatment for only two days proved necessary under hospital conditions. Details regarding the administration of the drugs are given and it is noted that both the patient and the larger worms passed became yellow. The action of "Priodax" on the worms is still uncertain. In no cases could the scolex be found. P.M.B.

(291f) Three cases of trichinosis were diagnosed in Santiago during the last quarter of 1950, bringing the total for the year to eighteen. R.T.L.

292—British Journal of Experimental Pathology.

a. AZIM, M. A. & COWPER, S. G., 1950.—" On the maintenance of strains of *Schistosoma mansoni*, *S. haematobium* and *S. matthei* in the laboratory in Egypt, with special reference to the use of gerbils." 31 (5), 577–589.

(292a) Baboons and gerbils are easily infected with *Schistosoma mansoni*, both by semi-immersion and the drip method, but in the gerbils the appearance of eggs in the faeces is irregular and their number scanty. Gerbils were also successfully infected with *S. matthei* (Rhodesian strain) and *S. haematobium*. Attempts to infect mice with *S. haematobium* and rabbits with *S. mansoni* failed. A hedgehog was infected with *S. haematobium* and eggs were found on one occasion in the faeces but the infection died out spontaneously. Guinea-pigs were infected with *S. matthei* but in some there was a spontaneous cure in about six months. Tables and graphs show the relationship between the number of cercariae used and the number of worms recovered. A description by

Dr. M. Hashem of the pathology of *S. mansoni* infection in gerbils is incorporated in the text of this report. R.T.L.

293—British Journal of Surgery.

a. WILSON, W. W., 1950.—"Hepatic hydatid disease." 37 (148), 453–463.

(293a) Of the sheep slaughtered in the public abattoir at Amman 12% were infected with hydatids. As dogs are unclean to Moslems they are seldom handled by adult Bedouins. Infection chiefly occurs during childhood. Details of surgical treatment of 36 cases, mostly seen at the Italian Hospital, Amman, are tabulated. It is suggested that the disease presents fairly clearly defined stages each requiring a definite method of treatment and carrying a prognosis which can be accurately forecast. Chemotherapy may be employed in cases in which the cyst is or is likely to become infected. 50,000 units of penicillin and 1·5 gm. of sulphadiazine in 20 c.c. of sterile saline twice daily is recommended for local chemotherapy. Systemic chemotherapy may prove useful in post-operative pyrexia caused by pericystic hepatitis. R.T.L.

294—British Medical Journal.

a. CASTEX, M. R. & CAPDEHOURAT, E. L., 1950.—"Medical treatment of hydatid cysts of lung." Year 1950, 2 (4679), 604–606.
b. BLYTH, R. I. K., 1950.—"War on leeches." [Correspondence.] Year 1950, 2 (4687), 1058.
c. MacLEOD, K. I. E., 1950.—"Leech in the nasopharynx." [Correspondence.] Year 1950, 2 (4687), 1058.
d. LEVONIAN, R., 1950.—"Leech in the nasopharynx." [Correspondence.] Year 1950, 2 (4687), 1058.

(294b) Blyth, on jungle patrol in Malaya, removed three leeches from (i) the inferior concha of the left nostril, (ii) the buccal wall and (iii) the tonsillar fossa by gripping them with a haemostat and pressing a burning cigarette end against them. The haemorrhage was controlled by the application of alum. In two other cases a leech was removed from the urethra by dilating the meatus with haemostat blades, gripping the leech and applying to it a few drops of dimethyl phthalate. As prevention was preferable the patrol wore condoms at night in heavily infested areas. R.T.L.

(294c) A leech, over 5 cm. in length, which had entered the nasopharynx of a Garhwali sepoy at Lansdowne, U.P., India, was removed by spraying with a 1 : 1,000 solution of adrenaline hydrochloride. R.T.L.

(294d) Three cases of haematemesis from leeches were treated at Nazareth. In two of these the leech was attached to the epiglottis and in the third case to the posterior wall of the pharynx. There was gradually increasing hoarseness accompanied by occasional expectoration of blood-stained sputum. The throat was cocainized and the leeches were extracted, with difficulty, with forceps. R.T.L.

295—Bulletin de l'Académie Vétérinaire de France.

a. GUILHON, J., 1950.—"Action de la thiodiphénylamine sur les nématodes intestinaux du chien." 23 (5), 245–248.

(295a) Although thiodiphenylamine [phenothiazine] is not as active against Ascaris as arecolin hydrobromide, or as tetrachlorethylene against Ascaris, hookworms and whipworms, it is of real value in the treatment of parasitic enteritis, especially in young carnivores heavily infected with nematodes, thanks to its low toxicity and its bactericidal and anti-diarrhoeic properties. For hookworms in the dog at least 20–25 cg. per kilo live bodyweight should be given daily for 3–5 days and repeated two or three times at intervals of 15–20 days. The cat is more sensitive to this drug but equally good results follow its use in *Toxocara mystax* infections. R.T.L.

296—Bulletin. Kentucky Agricultural Experiment Station.

a. HANSEN, M. F., TODD, A. C., KELLEY, G. W. & CAWEIN, M., 1950.—"Effects of a pure infection of the tapeworm *Moniezia expansa* on lambs." No. 556, 11 pp.

(296a) Parasite-free lambs, experimentally infected with *Moniezia expansa* by feeding with infected oribatid mites, showed a retardation in the rate of gain in weight which began when the tapeworms attained maturity and became most pronounced when the lambs expended their energies in expelling the worms naturally. The haemoglobin was reduced and bordered on anaemia but there was no appreciable change in the white cell counts although there was an irregular increase in the eosinophils. The duration of infection varied from 52 to 91 days and in one lamb continued for 228 days. Some evidence was obtained that heavy initial infections resulted in a resistance to further infection which lasted from 3–6 months. R.T.L.

297—Bulletin. Mushroom Growers' Association.

a. DUDDINGTON, C. L., 1950.—"Fungi that trap eelworms." No. 20, pp. 191–195.

(297a) This is a semi-popular article in which several predaceous fungi are mentioned or briefly described. The fungi are *Trichothecium flagrans, Arthrobotrys oligospora, Dactylella ellipsospora, D. bembicoides, Harposporium anguillulae* and *Acrostalagmus obovatus.* J.B.G.

298—Bulletin de la Société de Pathologie Exotique.

a. TISSEUIL, J., 1950.—"Éléphantiasis et volvulose." 43 (9/10), 556–558.
b. TOULANT, P., ROBINEAU, G. & PUYUELO, R., 1950.—"Les lésions du fond de l'oeil dans l'onchocercose africaine." 43 (9/10), 615–625.
c. DESCHIENS, R. & POIRIER, M., 1950.—"Les lésions de l'intoxication expérimentale du cobaye par l'extrait de *Fasciola hepatica.*" 43 (11/12), 697–699.
d. PICK, F., 1950.—"Sur des oeufs de formation tératologique du trématode *Watsonius watsoni.*" 43 (11/12), 704–705.
e. PICK, F., 1950.—"Sur la partie céphalique du trématode *Watsonius watsoni.*" 43 (11/12), 706–708.
f. PICK, F., 1950.—"Sur le mode de nutrition du trématode *Watsonius watsoni.*" 43 (11/12), 708–711.

(298a) *Onchocerca volvulus* cysts are frequently seen in French West Africa. Although the microfilariae occur in the skin their actual presence can only be determined by microscopical examination but the pachydermatous condition of the skin makes a clinical diagnosis easy. This condition has none of the characteristics of tropical elephantiasis. Elephantiasis is very rare and *O. volvulus* does not appear to have any role in its aetiology. R.T.L.

(298b) In the Sudan and on the Upper Volta, choroiditis and optic atrophy due to the microfilariae of *Onchocerca volvulus* are common. The chorio-retinitis lesions in the same eye are remarkable for their number and variety. Optic nerve atrophy was observed in 13 cases out of 31 natives with mild or serious eye troubles. R.T.L.

(298d) When *Watsonius watsoni* are placed in a culture medium coloured blue by aqueous solution of pyocyanine and kept at 37°C. for 48 hours, the eggs laid in the medium are abnormal in shape and not viable. R.T.L.

(298e) The anterior end of *Watsonius watsoni* has several rings of projecting papillae. The pharyngeal bulb can be invaginated and folded back. The body can form a functional funnel. The cytochromes are preserved when specimens are fixed in glycerol μ and are shown up by Mann's methyl-eosin. R.T.L.

(298f) Pick is of the opinion that *Watsonius watsoni* lives as a saprophyte in the large intestine of its hosts, feeding on faecal matter. Its intestinal contents are usually free from microscopically recognizable bacteria. R.T.L.

299—California Agriculture.

a. BAINES, R. C., 1950.—"Nematodes on citrus. Soil fumigation and resistant citrus varieties promising as controls." 4 (8), 7.

(299a) This article outlines briefly the work being carried out on citrus-root nematode (*Tylenchulus semi-penetrans*) at the Citrus Experiment Station, Riverside, California. The optimum soil temperature for infection of the roots and development of the nematodes is between 77°F. and 88°F.: the larvae can survive in soil kept at 91°F. for 2½ months, at 81°F. for 6½ months, at 70°F. for one year and at 59°F. and 48°F. for more than a year. In the field the nematodes can survive for at least three years. A number of species and varieties of *Citrus* and nearly related genera have been tested for resistance. Most are susceptible: some strains of *Poncirus trifoliata* are highly resistant; four species of tree related to citrus are immune, viz. *Balsamocitrus Dawei, Clausena lansium, Murraya paniculata* and *Severinia buxifolia*. Some may be useful in breeding nematode resistant rootstocks for citrus, and breeding work is being done. No chemical can yet be recommended for control of nematodes on living citrus trees. Fumigation of infested soil in the field has not proved reliable. M.T.F.

300—Časopis Lékařů Českých.

a. MAREŠOVÁ, Z. & SOYKA, O., 1950.—"Filariasa u navrátilce z tropických krajů." 89 (23), 659–661. [English summary p. 661.]

(300a) Microfilariae of *Wuchereria bancrofti* with nocturnal periodicity were present in the blood of a case of elephantiasis. The infection had been acquired in Tahiti. R.T.L.

301—Chirurgia Italiana.

*a. MATRONOLA, G., 1950.—"La via transtoracica larga nella cura delle cisti di echinococco del fegato a sviluppo superiore." 4 (2/3), 126–133.

302—Circular. Clemson Agricultural College, South Carolina.

a. GRAVES, J. T., 1950.—"Prevention and control of swine diseases and parasites." No. 350, 8 pp.

(302a) In South Carolina *Stephanurus dentatus* is present in about 95% of all pigs marketed. About 85% of all livers and other parts of the carcasses are condemned. R.T.L.

303—Comptes Rendus des Séances de la Société de Biologie. Paris.

a. DESCHIENS, R. & POIRIER, M., 1950.—"L'intoxication expérimentale du cobaye par l'extrait de *Fasciola hepatica*." 144 (19/20), 1345–1346.
b. LAGRANGE, E. & SCHEECQMANS, G., 1950.—"Recherches expérimentales sur l'infestation à *Bilharzia mansoni* de la souris." 144 (19/20), 1422–1424.
c. LAGRANGE, E. & SCHEECQMANS, G., 1950.—"Sur l'épidémiologie de la bilharziose expérimentale à *B. mansoni*." 144 (23/24), 1703–1705.
d. LAGRANGE, E., SCHEECQMANS, G. & SARKISSIAN, M., 1950.—"Recherches expérimentales sur les poisons anti-mollusques." 144 (23/24), 1705–1707.

(303a) The reactions experimentally induced in guinea-pigs by aqueous and trichloracetic extracts of *Fasciola hepatica* are subacute or chronic. The pathological manifestations are loss of weight and progressive asthmatic dyspnoea. The lesions occur especially in the lungs, kidneys, liver and spleen. There is a hyperleucocytosis and eosinophilia in the blood and medulla and a haemoglobin anaemia. Of all the helminth extracts hitherto studied experimentally, that of *F. hepatica* is the only one which induces a relatively important and constant haemic eosinophilia in the guinea-pig. R.T.L.

(303b) Miracil D and nile-blue sulphate have a remarkably lethal effect on the

cercariae of Bilharzia and on the miracidia of Bilharzia and Fasciola. This effect has no connection with the therapeutic activity of these substances for nile-blue has no action on bilharziasis in mice and miracil has no effect on experimental fascioliasis. R.T.L.

(303c) Instances are cited in which the discharge of *Schistosoma mansoni* cercariae by *Planorbis glabratus* does not follow its normal course. In some cases there are apparent cures, in others the duration of the infectious period is reduced and in others again the cercarial discharge is slight. These variations have not yet been explained but an understanding of their cause may contribute usefully to the technique of Bilharzia control. R.T.L.

(303d) Of 185 chemicals tested for toxicity to *Planorbis glabratus*, two wetting agents, viz. zephirol (dimethyl alkylbenzylammonium chloride) and cetavlon (cetyltrimethylammonium bromide) at 10^{-5} immobilize these snails in 30 minutes and are lethal in less than 24 hours. They also kill the bilharzia cercariae in less than two minutes in a dilution of 10^{-4} and in less than one hour in 10^{-5} whereas copper sulphate kills them only after one hour in 10^{-6}. R.T.L.

304—Cornell Veterinarian.

a. WHITLOCK, J. H., 1950.—" The anemias in the trichostrongylidoses." **40** (3), 288–299.
b. O'ROKE, E. C. & CHEATUM, E. L., 1950.—" Experimental transmission of the deer lungworm *Leptostrongylus alpenae*." **40** (3), 315–323.
c. MAPES, C. R., 1950.—" The lancet fluke, a new parasite of the woodchuck." **40** (4), 346–349.

(304a) Whitlock deals with the complicated problems involved in assessing the anaemia in sheep attributable to trichostrongyle infections. Most investigators have failed to realize the enormous error in standard blood examination. Haemocrit determinations run at slow speed for short periods can give erroneous diagnoses. His experiments demonstrated that parasites could cause a considerable degree of anaemia without affecting the net weight of the host. He notes that there is a progressive idiopathic anaemia in lambs shortly after weaning. There is evidence that problems connected with the sheep erythron are so closely related, directly or indirectly, to heredity, diet, parasites, growth and metabolism that is doubtful if an investigation into any one of these can safely ignore the others. The technological confusion respecting the sheep erythron is probably largely due to the difficulty of obtaining accurate measurements of the small cell units. R.T.L.

(304b) In a series of field experiments it was shown that neither the first stage larvae of *Dictyocaulus* nor of *Leptostrongylus* are directly infective to deer, but when *Succinea retusa*, *Polygyra albolabris* and other snails were available eggs of *L. alpenae* appeared in the faeces 49 days after the deer had fed on the infected pastures. The shortest time required for the lungworm larvae to reach the infective stage in the snail was 35 days. R.T.L.

(304c) *Dicrocoelium dendriticum*, which in recent years has spread with alarming rapidity in sheep and cattle in New York State, is now reported in four woodchucks, *Marmota monax rufescens*, examined by Mapes. This is the first record of its occurrence in this host and in a rodent in North America. The seasonal migrations of infected woodchucks may contribute to the extension of the enzootic area and introduce a new problem in the control of this liver-fluke. R.T.L.

305—Deutsche Gesundheitswesen (Das).

a. WELCKER, E. R., 1950.—" Askaridiasis und akute Mesenterialdrüsenveränderungen." **5** (15), 456–459. [English, French & Russian summaries pp. 458–459.]

(305a) Welcker describes acute changes in the mesenteric glands of man caused by Ascaris infection. He records a case of ascariasis of the ileum where eosinophilia accompanied changes in the mesenteric gland. A.E.P.

306—Deutsche Medizinische Wochenschrift.

a. ZSCHUCKE, J., 1950.—"Zur Frage der Behandlung der Spulwurminfektion mit Bedermin." **75** (24), 839–840.
b. EICHHOLTZ, F., HOTOVY, R., SAUER, A. & WEISSFLUG, I., 1950.—"Egressin, ein neues Chemotherapeutikum gegen die Oxyureninfektion beim Menschen." **75** (25), 868–870.
c. HANNAK, S., 1950.—"Erwiderung zu der Arbeit von Günther Leick 'Die Häufigkeit des Vorkommens von Oxyuriasis vermicularis'." **75** (27/28), 953–954.
d. ASENJO, A. & BUSTAMENTE, E., 1950.—"Die neurochirurgische Behandlung der Cysticerkose." **75** (36), 1180–1183.

(306a) Zschucke ascribes the toxic effects of Bedermin (containing ascaridol and carbon tetrachloride) described by Jochims & Wrede [*Dtsch. med. Wschr.*, 1949, **74** (43), 1308–1309] to the action of carbon tetrachloride. Bedermin should not be stored too long before use and should only be administered in cases where it is specially indicated. For uncomplicated massive infections with Ascaris treatment with ascaridol alone is to be preferred. A.E.F.

(306b) Eichholtz *et al.* have used Egressin with success in the treatment of enterobiasis. The effective principle is N-isoamylcarbamic acid-3-methyl-6-isopropylphenyl-ester : the substance is in the form of colourless crystals, easily soluble in organic solvents, hardly soluble in water. For children under 12 the recommended dosage is 1 gm. Egressin three times daily for two days, for older children and adults this dose is doubled. A first series of 24 children and adults treated showed 95% efficacy, judged by disappearance of symptoms, elimination of dead worms, and negative anal swabs up to eight weeks after treatment. In a second series of 35 cases there was a 90% efficacy, and 57% remained negative up to four months after treatment. The drug was very well tolerated : in toxicity tests a single dose of 6 gm. produced no ill effects. A.E.F.

(306c) Hannak points out that the variations in figures for Enterobius infection reflect the different diagnostic techniques. The importance of dust as a vector for Enterobius ova is often underestimated. Post-mortem findings do not give accurate figures for incidence and Hannak thinks this may be due to death of worms in the cadaver and their digestion before the post-mortem takes place. A.E.F.

(306d) Asenjo & Bustamente report that, of 4,440 patients examined at the Santiago de Chile Neurological Clinic up to December 1949, 59 (i.e. 1·3%) were diagnosed as cases of cerebral cysticerciasis. They discuss the pathology of this condition (in all but one case *Cysticercus cellulosae* was involved : the other revealed a *C. bovis* infection). Surgical treatment (removal of the parasite) was successful in 60% of cases of single cysts ; in generalized cysticerciasis mortality was 62%. A.E.F.

307—Deutsche Pelztierzüchter (Der).

*a. SPREHN, 1950.—"Aus der Forschungsstelle für Pelztierzucht Burgbernheim. Wurmbefall und Entwurmung bei Pelztieren. I–II." **24**, 69–70, 84–86.

308—Dokladi Akademii Nauk SSSR.

a. MACHULSKI, S. N., 1950.—[The helminths of elks in Buryat-Mongolia.] **73** (6), 1313–1315. [In Russian.]
b. KIRYANOVA, E. S., 1950.—[*Digordius* (part *Paragordius*) *excavatus* n.sp. in the lower Pyandzh (Tadzhikistan).] **74** (1), 157–158. [In Russian.]
c. STRELKOV, Y. A., 1950.—[New species of monogenetic trematode from the Far East tortoise *Amyda sinensis*.] **74** (1), 159–162. [In Russian.]
d. BURDELEV, T. E., 1950.—[New nematode—*Ollulanus skrjabini* n.sp. from the digestive tract of lion.] **74** (1), 163–164. [In Russian.]
e. MARKOV, G. S., 1950.—[Glycogen and fat in some helminths in connection with their conditions of living.] **74** (1), 165–167. [In Russian.]
f. MOROZOV, F. N., 1950.—[Phylogenetic interrelations of the trematodes belonging to the superfamily Heterophyoidea.] **74** (3), 645–648. [In Russian.]

g. OLIGER, I. M., 1950.—[Causes of destrobilization in cestodes of Tetraonidae.] 74 (4), 869–872. [In Russian.]
h. VINNITSKI, I. M., 1950.—[Mechanism of anthelmintic immunity in the coordinate phylogeny of the host and parasite.] 75 (3), 477–480. [In Russian.]
i. KLESOV, M. D., 1950.—[Contribution to the biology of two nematodes of the genus *Thelazia* Bosc 1819, parasites of cattle.] 75 (4), 591–594. [In Russian.]
j. OSHMARIN, P. G., 1950.—[Acceleration in the genital system as the true origin of progenesis in some trematodes.] 75 (4), 595–596. [In Russian.]
k. SPASSKI, A. A., 1950.—[New family of cestodes—Catenotaeniidae n.fam. and a review of the system of anoplocephalids (Cestoda : Cyclophyllidea).] 75 (4), 597–599. [In Russian.]

(308a) In two elks killed in Buryat-Mongolia, Machulski found the following : *Ostertagia antipini* n.sp., *O. orloffi, Trichostrongylus colubriformis, Spiculopteragia schulzi, S. spiculoptera, Nematoditella longispiculata, Parabronema skrjabini, Moniezia expansa, Cysticercus tenuicollis* and *Paramphistomum cervi. O. antipini* n.sp. differs from other members of *Ostertagia* by (i) possessing delicate and thin spicules with three processes : the external process bends inwards and overlaps that of the other spicule ; the median processes end with a barb and the internal process has a notch at the tip ; (ii) the absence of prebursal papillae. The bursa of *O. antipini* n.sp. is illustrated. C.R.

(308b) The author gives a detailed description of a male of *Digordius* (partim *Paragordius*) *excavatus* n.sp. from an unknown host. She includes figures of certain parts of this hairworm [but does not indicate the characters on which the new species is based]. C.R.

(308c) A monogenetic trematode *Neopolystoma palpebrae* n.sp. is described from under the lower eyelid of *Amyda sinensis*. Out of 49 tortoises, 17 (35%) were infected. This new species differs from *N. orbiculare* in the structure and size of the hooks of the copulatory apparatus which are one third the size of those of *N. orbiculare*. It differs from *N. rugosa, N. chelodinae* and *N. doitidae* in the number of hooks of the copulatory apparatus and from *N. chelodinae* further in having hooks between the two posterior suckers. C.R.

(308d) Burdelev describes *Ollulanus skrjabini* n.sp. from the oesophagus and stomach of a lioness which was born and died in the Moscow Zoological Park. The posterior end of the female differs from that of *O. tricuspis* in that it is provided with four tooth-like processes while the position of the vulva in relation to the length of the body is as 8 to 1 or 9 to 1. The spicules are longer than those of *O. tricuspis*. C.R.

(308e) Markov has studied histochemically and microchemically the distribution of glycogen and fat in the following trematodes from the grass frog : *Haplometra cylindraceus, Dolichosaccus rastellus* and *Polystoma integerrimum*. Microchemical determinations show that (i) in the bodies of these trematodes there is three to six times as much glycogen as in the muscles of the frog ; (ii) the body of *Haplometra* contains only as much glycogen as *Polystoma*, but less than half that of *Dolichosaccus*, which had only as much glycogen as there was in the liver of the host. Data are tabulated for the quantity of glycogen in the body of these flukes and in tissues of the frog, and the distribution of glycogen and fat in the parenchyma, suckers, muscles, intestine, excretory canal, ovary, vitellaria, vitelline cells in eggs, testes and male organs. From the microchemical and histochemical determinations of glycogen it follows that the largest quantity of glycogen is contained in the body of *Dolichosaccus* which is a parasite of the intestine, and the smallest in *Haplometra* which is a parasite of the lungs. *Polystoma* falls between these two species. The author explains these variations on the basis of the difference in the amount of oxygen in the various habitats. The relative quantity and distribution of fat in the body of parasites appears to be an additional criterion in judging the type of metabolism, since this depends on the distribution and quantity of glycogen. C.R.

(308f) Morozov discusses the phylogenetic interrelationships within the superfamily Heterophyoidea and comes to the conclusion that a new family Galactosomatidae should be included in it. This family should be divided into four subfamilies : Galactosomatinae, Haplorchinae, Adleriellinae and Knipowitschetrematinae n.subf. In Galactosomatinae he places *Galactosomum, Cercarioides, Stictodora* and *Sobolephya* n.g. which differ from the other genera in the arrangement of the vitellaria, testes, ovary and receptaculum seminis, and by the peculiar armature of the genital sucker. The new subfamily Knipowitschetrematinae contains the genera *Knipowitschetrema, Ponticotrema* and *Tauridiana*. In the Heterophyidae he creates a new subfamily Euryhelminae. C.R.

(308g) Oliger examined 531 specimens of capercaillie, blackcock, woodcock and white partridge [?ptarmigan] from the European part of the U.S.S.R. and 287 of these were examined in the autumn-winter-spring period. In the tapeworms destrobilization takes place when the birds change to winter feeding and segments begin to grow again at the end of February, beginning of March and very abundantly later in March. In his opinion this is caused by the lack of sugar in the winter food of these birds which produces hunger in the tapeworms. Therefore although the birds are usually in good condition in winter as a result of adequate fatty diet, the absence of sugar has the opposite effect in the nourishment of tapeworms. C.R.

(308h) In this essay on the mechanism of anthelmintic immunity Vinnitski discusses the mutual relationships between the phylogeny of the parasite and that of the host. Summarizing his views on immunological processes in relation to ascarids he is of the opinion that in nonspecific hosts there may be produced an ascarid antitoxic immunity and ascaricid immunity to migrating larvae. The latter has a histogenic character and produces encapsulation of the larvae. Such encapsulation is useful for helminths and is not harmful to nonspecific hosts, which are potential intermediate hosts. Specific hosts produce a very strong antitoxic immunity and almost an absence of ascaricid immunity in relation to ascarids in the intestine, but possess a natural ascaricid immunity to migrating larvae so as to prevent heavy infestation when large numbers of eggs are swallowed. The strengthening of the antitoxic action of immunological mechanisms in the host during the process of its phylogenesis is useful to the parasite because it preserves the life of the host without which the life of the parasite is impossible. The immuno-biological interrelationships between parasite and host limit the damage to the host and are most useful to the parasite. Vinnitski is convinced that the mutual dependence in the evolution of both components in the system of "parasite-host" follows the line of reduction of mutual injury and of increase of mutual adaptation—that is from parasitism to commensalism. C.R.

(308i) Klesov reports his experiments on the life-cycle of *Thelazia rhodesii* and *T. gulosa*. In both species the intermediate host is *Musca larvipara*. In 5,058 flies dissected the infection was 3·5%. Male flies numbering 47 were free from infection. First-stage larvae of *Thelazia* are taken with eye secretion into the intestine of the fly ; a few hours later they penetrate into the abdominal cavity, and later into the ovarian follicles, where further metamorphosis takes place. The first-stage larva has two phases in its development ; it moults and becomes a second-stage larva, measuring 3·6–4 mm., which moults and becomes a third-stage infective larva. It then leaves the ovarian follicle, migrates into the mouth parts of the fly from which it is transferred to cattle ; at that time the larva measures 5·06–7·9 mm. The development in the fly takes 15–30 days. By allowing infected flies to bite calves and by the direct introduction of infective larvae the author found adults of *T. rhodesii* in 20–25 days. According to Klesov, larvae of *T. gulosa* also developed in *Musca larvipara*. They are smaller and when placed on the conjunctiva of a calf, young female worms were found seven days later. The similarity of the life-cycles of *T. rhodesii* and *T. gulosa* suggests the same prophylactic measures. C.R.

(308j) An examination of some hundreds of *Ornithodendrium imanensis* from a black crow showed that their size varied from 0·955–2·3 mm., but in all cases the trematodes had very strongly developed sexual organs and fully developed uterus filled completely with eggs. The small flukes were young but had fully developed genital organs. The acceleration in the development of the genital system may explain the origin of the phenomenon of progenesis in some trematodes in which metacercariae are able to develop sexually. This hypothesis is confirmed by the fact that in the Lecithodendriidae there are forms in which progenesis occurs, e.g. *Prosthodendrium chilostomum.* C.R.

(308k) Spasski, reviewing the suborder Anoplocephalata comes to the conclusion that is should be classified as follows: Anaplocephaloidea with the families (i) Anoplocephalidae, (ii) Avitellinidae nom.nov. (syn. Thysanosomatidae), (iii) Linstowiidae and (iv) Catenotaeniidae fam.nov. As the basis for this classification he has taken the structure of the uterus or parenchymatous (egg) capsules. A diagnosis of the new family Catenotaeniidae is included. C.R.

309—East African Medical Journal.

a. LAURIE, W., 1950.—"Hetrazan in bancroftial filariasis." 27 (7), 263–268.

(309a) Of 15 cases of filarial elephantiasis treated only two showed partial improvement. Laurie points out that although the dosage of hetrazan recommended for optimal results in bancroftian filariasis is about 2 mg. per kg. body-weight three times daily for about 21 days, such long continued courses are impractical in field work in Africa. He finds that 15 mg. are tolerated by practically all his patients and could be repeated within a short space of time and is of opinion that very short term high dosage courses are practicable and effective. As hetrazan is a remarkably safe drug, which can be taken over long periods without cumulative effects, it could obviously be used as a prophylactic. Laurie suggests that conflicting reports on early work may be due to the fact that the hetrazan formerly sold was the hydrochloride salt containing 85% active base and was changed later to the citrate salt containing only 51%. R.T.L.

310—Entomologiste. Paris.

a. DOLLFUS, R. P. & THÉODORIDÈS, J., 1950.—"Mermithidé (Nematoda) chez un *Anthaxia quadripunctata* (L. 1758) [Coléop. Buprestidae] d'Europe centrale." 6 (4/5), 96–99.

311—Ergebnisse der Wissenschaftlichen Untersuchung des Schweizerischen Nationalparks.

a. ALTHERR, E., 1950.—"Les nématodes du Parc National Suisse. (Nématodes libres du sol)." 3 (22), 1–46.

(311a) Altherr has recorded the free-living nematodes collected at various centres in Switzerland. About 80 species were found and of these the following are described as new: *Macramphis stercorarius* n.g., n.sp., *Eucephalobus diversipapillatus* n.sp., *Longidorus macramphis* n.sp., *Nygolaimus cuniculus* n.sp., *Pharetrolaimus alpinus* n.sp., *Pungentoides buffalorae* n.sp., *P. engadinensis* n.sp., *P. fuorni* n.sp. and *Tylenchus buffalorae* n.sp. In a footnote Altherr points out that in view of the systematics established by Thorne (1939), his *Pungentoides*=*Dorylaimellus* or *Enchodelus*, *Pharetrolaimus*=*Tylencholaimus*, and *Longidorus*=*Longidorella.* P.M.B.

312—Flygblad. Statens Växtskyddsanstalt. Stockholm.

a. ANON., 1950.—"Potatisålen." No. 90, 4 pp.

(312a) This leaflet is a popular description of the potato nematode and its attacks, its distribution in Sweden the Swedish regulations for and its control. S.B.

313—Folha Medica. Rio de Janeiro.

a. SANTOS, J. P., 1950.—" Notas de técnica helmintológica." 31 (11), 81–86.

(313a) This paper gives a brief outline of the classification of Nemathelminthes and Platyhelminthes, lists those species of which the eggs are found in the faeces and gives the principal measurements of the larvae of *Necator americanus*, *Strongyloides stercoralis* and *Rhabditis hominis*, and concentration techniques for eggs, larvae and microfilariae. R.T.L.

314—Gartner-Tidende.

a. LINDHARDT, K., 1950.—" Angreb af nematoder på violer, anemoner og liljer." 66 (42), 468–469.

(314a) Attacks in Denmark of *Aphelenchoides fragariae* Ritzema Bos, 1891 are described in *Viola odorata semperflorens* and one other *Viola* sp., *Anemone japonica*, *Lilium philippinense formosanum* and *L. longiflorum*. It is not yet possible to control the eelworm by chemicals. S.B.

315—Gastroenterology. Baltimore.

a. CONN, H. C., 1950.—" Hookworm infection in veterans, with some notes on *Strongyloides stercoralis* and other parasites." 15 (4), 647–652.

(315a) Although hookworm infection was relatively common in returned veterans, infections with *Strongyloides stercoralis*, *Ascaris lumbricoides* and *Trichuris* were relatively uncommon. Severe psychiatric disability resulting from parasitic infection may persist indefinitely. The public health problem presented by these infections is a minor one in Michigan because of the climate and good hygienic habits of the population. R.T.L.

316—Gazzetta Internazionale di Medicina e Chirurgia.

*a. CARLI, C., 1950.—" Le cisti da echinococco del rene." 54, Suppl. No. 3, pp. 45–54.

317—Gesundheits-Ingenieur.

a. STUTZ, L., 1950.—" Über den Einfluss der Klärschlammtrocknung nach dem 'Elka'—Verfahren auf die Askarideneier." 71 (11/12), 184–185.
b. HÖTZ, M. & BROSCHEIT, A., 1950.—" Nachweis von Wurmeiern durch einfache Papierfiltration." 71 (11/12), 185–186.

(317a) Stutz has tested the effect on the survival of Ascaris ova of the "Elka" sludge-drying process as practised at Mannheim. By this method fresh sludge is dried, caked, and, when hard, placed in fermenting heaps where a temperature of 70°C. is generated : the material is then finely ground and used as manure. The results of examining 0·05 c.c. sludge at various stages of the process are as follows : fresh sludge contained two Ascaris ova ; at the beginning of drying, 12 ova ; at the middle of the drying process, 26 ova ; at the end, 8 ova ; in the ferment heaps, 4–8 ova ; in the end-product, 6 ; later in the winter, one ; in May, none. The "Elka" process thus kills Ascaris ova in summer but not in winter. A.E.F.

(317b) Hötz & Broscheit have successfully used a simple filter-paper technique for demonstrating helminth ova in sewage. Material is drawn through filters into a flask by means of a suction pump. The filter paper can be examined on a slide at once or even many weeks later : if the filter has dried and is no longer transparent, moistening with water is all that is necessary. The method becomes quantitative as well as qualitative if a measured amount of sewage is used. A.E.F.

318—Giornale Italiano di Chirurgia. Naples.

a. LORIZIO, V., 1950.—" Contributo al trattamento chirurgico dell'echinococco polmonare con tecnica in due tempi e chiusura per prima della cavità." 6 (2), 97–106.

319—Grower. London.

a. STAPLEY, J. H., 1950.—"Parathion kills chrysanthemum eelworm." 34 (19), 935.

(319a) *Aphelenchoides ritzema-bosi* infection of chrysanthemums can be controlled in English commercial nurseries by a parathion mixture, "Fosferno" 20, used as a spray. Two sprayings with a solution of one fluid ounce of "Fosferno" 20 in five gallons of water (=0·025% parathion) are recommended. The first is applied at the rooted cutting stage about the end of April, the second after the plants are set out in their permanent quarters about a month later. A third may be given a month later but is not essential. Growers are reminded that precautions in handling this dangerous substance are necessary. R.T.L.

320—Health Bulletin. Department of Health for Scotland.

a. SEILER, H. E. & NORVAL, J., 1950.—"Notes on *Taenia saginata* and *Cysticercus bovis*." 8 (3), 46–47.

(320a) Between July and December 1948, *Cysticercus bovis* occurred in 58 (0·4%) and in 1949 in 249 (1·16%) of the bovine carcasses slaughtered at the abattoir in Edinburgh. Some of the animals came from the north-east and south-east of Scotland, others from Ireland. Only 45 of the 249 infected carcasses were passed. Of these, 16 were home bred and 25 were of Irish origin. Twenty cases of *Taenia saginata* were traced in the City of Edinburgh. Of these cases three were adult males, 14 adult females, two boys and one girl under 6 years of age. R.T.L.

321—Higiena i Sanitariya. Moscow.

a. KRISILOV, D. V., 1950.—[Studies of meat infected with Cysticercus with filtered ultraviolet rays.] Year 1950, No. 4, pp. 52–53. [In Russian.]

(321a) Live and dead *Cysticercus bovis* and *C. cellulosae* showed colour differences when examined with filtered ultra-violet rays. With both species, when isolated from muscle, the fluorescence was rose coloured whereas within the muscle it had an orange shade. Cysticerci whether isolated or in muscle, when killed by freezing, salting or heat, showed the same fluorescence as the living cysts. The rose colour was produced by the cysticercus fluid. The method is of no value in determining the viability of the cysticerci. C.R.

322—Hospital. Rio de Janeiro.

a. REZENDE ALVES, J. B. DE & RIBEIRO, L. A., 1950.—"Tratamento cirúrgico da elefantíase." 37 (5), 729–745.

323—Indian Journal of Helminthology.

a. CHAUHAN, B. S., 1950.—"Trematodes from Indian marine fishes.—Part V. Description of a new species of the genus *Mazocraeoides* Price, 1936 (Fam.-Mazocraeidae Price, 1936, Diclidophoroidea: Monogenea)." 2 (2), 63–66.

b. KAW, B. L., 1950.—"Studies in helminthology: helminth parasites of Kashmir. Part I. Trematoda." 2 (2), 67–126.

(323a) *Mazocraeoides prashadi* n.sp. collected from a clupeid fish at Puri differs from *M. georgei* in that there are two pedunculated pairs of posterior hooks, the genital sucker is muscular, very prominent and abuts against the bifurcation of the gut; the testis is elongated and oval. R.T.L.

(323b) Of the 33 trematode species described from ten fishes and frogs collected in and from places adjoining the valley of Kashmir 13 are new, viz., *Allocreadium nemachilus* n.sp., *Clinostomum schizothoraxi* n.sp., *Neascus vetastai* n.sp., *Phyllodistomum loossi* n.sp., *P. frequentum* n.sp., *P.* sp. inq., *Diplozoon kashmirensis* n.sp., *Prosotocus partapus* n.sp., *Nenimandijea kashmirensis* n.g., n.sp., *Ganeo srinagarensis* n.sp., *Tetracotyle ranae* n.sp., *Eupolystoma rajai* n.g., n.sp., *Diplostomulum bufonis* n.sp. Keys are provided for (i) the

genera of (a) Polystomatinae and (b) Pleurogenetinae ; for (ii) the species of (a) *Diplozoon*, (b) *Prosotocus*, (c) *Ganeo* ; for (iii) the Indian species of (a) *Phyllodistomum* and (b) *Allocreadium* ; and for (iv) the metacercarial species of *Clinostomum*. In a revision of the Gorgoderidae Kaw regards the presence or absence of muscular pharynx as the only diagnostic character for its subdivision into Gorgoderinae and Anaporrhutinae. He includes in *Phyllodistomum* all the species formerly placed under *Gorgoderina*, *Catoptroides*, *Microlecithus* and *Dendrorchis*. The genus *Nenimandijea* in differentiated from the other genera of Pleurogenetinae, especially from *Glyptoporus*, by the topography of the various organs. *Eupolystoma* n.g. is differentiated from the other genera of Polystomatinae. The haptor is without large hooks. Gonads are post-equatorial, testes median, post-ovarial and follicular, uterus long and pre-ovarial with many eggs, vaginal and genital hooks present. R.T.L.

324—Indian Medical Gazette.

a. LAL, R. B., 1950.—" A 'new latrine' suitable for rural communities, camps and isolated bungalows." 85 (10), 469–473.
b. REDDY, D. G. & VARMAH, K., 1950.—"*Paryphostomum sufrartyfex* (intestinal fluke) infection in man." 85 (12), 546–547.

(324a) A new latrine, primarily designed to serve the rural population of West Bengal, is described and illustrated. It consists of (i) two foot rests, (ii) a pan of the usual water closet, Indian wash down type, (iii) a curved pipe and (iv) a trench or disposal pit. The foot rests are cement-plastered burnt bricks. The pan is of glazed burnt clay or cement. In the pan is a circular hole, 6 in. in diameter, through which the faeces pass without soiling the walls of the vertical pipe below. A long narrow central depression drains the urine, ablution water and other liquids through the hole. The pipe, made of clay or cement, carries the excreta from the pan to the trench, one foot away, but its lateral extension is 1½ ft. long to project 6 in. beyond the sides of the trench. It also provides 2 ft. of head to the ablution water or other water used for flushing out the excreta. The pipe is horn-shaped or is a waterseal pipe. The latter can be used in internal bathrooms. About one gallon of water will be required to flush out the excreta and will suffice to induce syphon action. The trench is 2 ft. wide, 3 ft. deep at the two ends and 3½ ft. deep at the centre where the pipe ends. Its capacity should, under Indian conditions, provide 9 cu. ft. or more per adult and will last three to four years. A trench 10 ft. long should suffice for six persons for 3½ to 4 years. It should be covered with seasoned bamboo or strong branches over which palm or other suitable leaves should be spread to hold rammed earth forming a convex surface to the trench and plastered over with puddled clay or turf. It may be rectangular or semicircular and provided with a ventilating shaft made of a hollow bamboo and cowled with a half coconut shell. The cost should not exceed 5 Rs. and the trench could be dug for 2 Rs. R.T.L.

(324b) Although *Paryphostomum sufrartyfex* has been reported from the pig in Bengal this report of its occurrence in man is the first record of its presence in South India. The patient was a native of Nammali village, Tindivanam Taluk, South Arcot, Madras. Death was due to marked malnutrition and anaemia, and several thousand flukes were collected at post-mortem. R.T.L.

325—Indian Veterinary Journal.

a. MURTY, G. N., 1950.—" Schistosomiasis in cattle." 27 (3), 204–205.

(325a) Nine cattle infected with *Schistosoma indicum* were observed in the Kurnool District. Some specimens of *Indoplanorbis* sp. inq. are reported to have discharged cercariae of the schistosome group. Sheep and goats were free from infection. R.T.L.

326—Journal of the American Medical Association.

a. ETTELDORF, J. N. & CRAWFORD, L. V., 1950.—"Treatment of ascariasis in children. Use of 1-diethylcarbamyl-4-methyl piperazine dihydrogen citrate (hetrazan®)." 143 (9), 797–799.

(326a) As a result of administering hetrazan to 15 children with ascariasis, Etteldorf & Crawford consider it an ascaricidal drug approaching the ideal if given at the rate of 6 mg. per kg. body-weight three times daily for at least a week. In resistant or heavy infections the dose might be increased to 10 mg. The drug can be administered orally without local effects, without prior starvation and without a laxative. R.T.L.

327—Journal of the American Veterinary Medical Association.

a. THORP, W. T. S., 1950.—"World public health problems." 117 (884), 374–378.
b. RYFF, J. F., BROWNE, J., STODDARD, H. L. & HONESS, R. F., 1950.—"Removal of the fringed tapeworm from sheep." 117 (885), 471–473.

(327a) In this unofficial account of the discussions at the 14th International Veterinary Congress, London, Thorp summarizes a report presented to the conference by Jepsen & Roth on *Cysticercus bovis* and *Taenia saginata* in Denmark. The incidence of cysticerciasis in Danish cattle which had increased slowly but steadily after World War I, particularly in the northern districts, increased much more rapidly during and after World War II. At the cooperative slaughterhouses throughout the country 1·25% of all beef cattle and 0·7% of all calves were found infected. A similar increase occurred in the incidence of *T. saginata* rising in 1946 to 3·6 persons per 10,000 inhabitants treated in various Danish hospitals. Women were infected five times as often as men. *T. saginata* eggs remained viable for 16 days in stored sewage, for 33 days in water and up to 159 days when exposed on grass in the open air. In calves heavily infected experimentally, 75% of the resulting cysticerci were viable at post-mortem 9–10 months after. R.T.L.

(327b) Condemnations of livers of western lambs in the U.S.A. may reach 65–85% as a result of infection with *Thysanosoma actinioides*. At Wyoming, 16·8% of the livers of 1,396 untreated sheep were condemned. Of 3,455 sheep previously treated, after 12 to 24 hours starvation, with teniatol [bis (5-chloro-2-hydroxyphenol)] at 0·04 gm. per lb. live body-weight, only 5·3% of the livers were condemned. Although the damage done to the host by *T. actinioides* is debatable, treatment is worth while as a lamb's liver is worth 40 cents to the packer. R.T.L.

328—Journal of the Australian Institute of Agricultural Science.

a. HANEY, T. G., 1950.—"Chemicals for the control of weeds and nematodes in tobacco seedbeds." 16 (3), 109.

(328a) Prepared tobacco seedbeds in North Queensland are usually sterilized by burning a layer of inner matrix of termite mounds on the surface. In tests of chemical methods "Cyanamid" pellets, 1 lb. per sq. yard mixed with urea 1 or 2 lb. per sq. yard, when mixed in the top three inches of soil 73 days before sowing gave good control of weeds and nematodes. D-D mixture at 48 c.c. per sq. yard, poured into holes 6 in. deep and 9 in. apart and then sealed off, effectively controlled the nematodes but apparently stimulated weed growth. R.T.L.

329—Journal of Comparative Pathology and Therapeutics.

a. GIBSON, T. E., 1950.—"Observations on the value of small daily doses of phenothiazine for the control of trichostrongylosis in sheep." 60 (2), 117–132.

(329a) When a daily dose of one gm. of phenothiazine was given to lambs within a few minutes of a dose of infective trichostrongylid larvae, the number of larvae which developed to maturity was reduced, but if several hours intervened the treatment had no effect on the establishment of the larvae in the host. The same daily dose had no effect

in reducing the number of mature worms present in sheep, nor did it prevent the development of severe parasitic gastritis in sheep continuously exposed to infection when several hours intervened between the dosing with phenothiazine and larvae. The daily dosing prevented the development of infective larvae from the ova passed in the faeces of treated sheep but the effect on the egg count was not constant. It is concluded that although phenothiazine-salt mixture, under field conditions, will reduce the pasture larval count it does not affect the worm burden. It will probably be useful for lambs running with ewes which are provided with this mixture although the adult sheep, if already infected, will not benefit. R.T.L.

330—Journal of General Physiology.

a. BUEDING, E., 1950.—" Carbohydrate metabolism of *Schistosoma mansoni*." 33 (5), 475–495.

(330a) Bueding found that *Schistosoma mansoni* removed from the medium in one hour an amount of glucose equivalent to 15% to 26% of their dry weight. The lactate produced accounted for more than 80% of the glucose utilized. Both glucose utilization and lactate production were the same under aerobic and anaerobic conditions. There was no post-anaerobic increase in oxygen uptake. Arsenite (1×10^{-3}M) and *p*-chloromercuric benzoate inhibited respiration and glycolysis ; this inhibition was not lifted by glutathione or thioglycollate. Fluoride (2×10^{-2}M) inhibited respiration, glucose utilization and lactate production. A cyanine dye ($2{\cdot}6 \times 10^{-6}$M) strongly inhibited respiration, but did not affect glycolysis ; respiration was inhibited by fouadin to a greater extent than glycolysis ; 2-methyl-1,4-napthoquinone was more effective as an inhibitor of glycolysis. Of the thirteen aliphatic and aromatic aldehydes examined *dl*-glyceraldehyde and *o*-nitrobenzaldehyde were the most effective inhibitors of glycolysis. The author concludes that in contrast to glycolysis, respiration is not essential for the survival of *S. mansoni*. W.P.R.

331—Journal of Helminthology.

a. WILLMOTT, S., 1950.—" On the species of *Paramphistomum* Fischoeder, 1901 occurring in Britain and Ireland with notes on some material from the Netherlands and France." 24 (4), 155–170.
b. SANDOSHAM, A. A., 1950.—" On *Enterobius vermicularis* (Linnaeus, 1758) and some related species from primates and rodents." 24 (4), 171–204.

(331a) Willmott finds that there are three species of *Paramphistomum* in cattle in the United Kingdom and Ireland. These are *Paramphistomum cervi* (Zeder, 1790) Fischoeder, 1901, and two new species which she names and describes as *P. hiberniae* n.sp. and *P. scotiae* n.sp. She compares these with *P. cervi* and *P. leydeni* Näsmark, 1937 and gives a brief account of gametogenesis and early cleavage. Two collections from the Netherlands are identified as *P. hiberniae* and one from France as *P. microbothrium*. S.W.

(331b) *Enterobius vermicularis* is recorded from three new hosts *Anthropopithecus troglodytes, Hylobates lar* and *Leontocebus rosalia* in the London Zoological Gardens. The specimens are compared with those from other hosts, including man. The unknown male of *E. anthropopitheci* is now described. *E. buckleyi* n.sp. from *Pongo pygmaeus, E. lerouxi* n.sp. from *Gorilla gorilla, E. brevicauda* n.sp. from *Papio porcarius, E. interlabiata* n.sp. from *Aotus felinus*, and *Buckleyenterobius dentata* n.g., n.sp. from *Lemur macaco* are described and illustrated. *E. atelis, E. lagothricis* and *E. duplicidens* are transferred to this new genus which is characterized by the presence of three teeth in the buccal cavity. *Cercopithecus aethiops* for *E. bipapillatus, Oedipomidas oedipus* for *E. callithricis* and *Lemur macaco* for *E. lemuris* are recorded as new hosts. Cameron's views that the species of *Enterobius* form a correspondingly related evolutionary series with their respective hosts is examined in the light of the additional information available. The genus *Enterobius* is subdivided into two subgenera, namely *Enterobius* n.subg. with *E. vermicularis* as type and *Trypanoxyuris* n.subg. with *E. trypanuris* as type. The *Enterobius* species in rodents

are discussed and *E. sciuri* Kreis, 1944 becomes a synonym of *E. sciuri* Cameron, 1932. The known records of the species of *Enterobius* and *Buckleyenterobius* are tabulated under their hosts and the localities in which these have been collected. S.W.

332—Journal of Heredity.

a. NIGON, V. & DOUGHERTY, E. C., 1950.—" A dwarf mutation in a nematode. A morphological mutant of *Rhabditis briggsae*, a free-living soil nematode." 41 (4), 103–109.

(332a) A morphological mutant of *Rhabditis briggsae* is described and illustrated. It is one-quarter shorter and no less thick than the normal form. Most parts of the mutant are reduced in an identical manner, except the eggs which have the same dimensions in both forms. The mutant appeared among the descendants of an hermaphrodite that had been submitted to 25°C. for 18 hours. Once isolated this "micro" type produced identical hermaphrodite descendants. With reduction in size there is impairment of the egg-laying mechanism. The ova are laid so slowly that they accumulate and cause the death of the parent. The theoretical consequences of the production of this mutant are discussed in relation to the general taxonomy of the group and to the potential importance of free-living nematodes in genetic research. R.T.L.

333—Journal of Infectious Diseases.

a. CHEN, H. T., 1950.—" The *in vitro* action of rat immune serum on the larvae of *Taenia taeniaeformis*." 86 (3), 205–213.

(333a) Chen has found a cysticercocidal substance in sera from rats experimentally infected with *Cysticercus fasciolaris* by feeding with eggs of *Taenia taeniaeformis*. This substance was not found in artificially immunized rats even though the serum had a precipitin titre of 1 : 3200. Immune serum lost its anticysticercocidal power if left overnight in contact with an excess number of living or finely ground cysticerci. The cysticercocidal substance does not prevent infection but it may destroy the parasites after they have settled in the liver. It is heat stable at 56°C. Immune serum when lyophilized retains its precipitin titre and protective property *in vivo*. The protective antibody is probably not associated with the cysticercocidal substance. Chen notes that physiological saline and pooled normal rat sera possess cysticercocidal properties. R.T.L.

334—Journal of the International College of Surgeons.

a. SOLER-ROIG, J., 1950.—" Surgical management of hydatid cyst of the lung." 13 (5), 628–636. [French, Spanish & Italian summaries p. 636.]

335—Journal of Investigative Dermatology.

a. FARRINGTON, J., 1950.—" Preliminary note on the treatment of creeping eruption by electrolysis." 14 (6), 395.

336—Journal of the Oklahoma State Medical Association.

a. McMULLEN, D. B., 1950.—" Parasitic diseases and problems in diagnosis." 43 (7), 318–320.

337—Journal of Parasitology.

a. MELVIN, D. M. & CHANDLER, A. C., 1950.—" New helminth records from the cotton rat, *Sigmodon hispidus*, including a new species, *Strongyloides sigmodontis*." 36 (6, Sect. 1), 505–510.

(337a) The cotton rat, *Sigmodon hispidus*, is the host of six cestodes and twelve nematodes. One of the cestodes is a larval form, viz. *Cysticercus fasciolaris*. To the list the authors contribute *Strongyloides sigmodontis* n.sp., based on host specificity as attempts to infect hamsters, guinea-pigs, white rats, mice and rabbits failed, and give a tabulated

337—Journal of Parasitology (cont.)

b. CHANDLER, A. C., READ, C. P. & NICHOLAS, H. O., 1950.—" Observations on certain phases of nutrition and host-parasite relations of *Hymenolepis diminuta* in white rats." **36** (6, Sect. 1), 523–535.
c. MAYHEW, R. L., 1950.—" Studies on bovine gastro-intestinal parasites XVI. Some results of feeding small amounts of phenothiazine on pure infections of the hookworm *Bunostomum phlebotomum*." **36** (6, Sect. 1), 536–540.
d. HUMES, A. G., 1950.—" Experimental copepod hosts of the broad tapeworm of man, *Dibothriocephalus latus* (L.)." **36** (6, Sect. 1), 541–547.
e. AMEEL, D. J., CORT. W. W. & VAN DER WOUDE, A., 1950.—" The germinal development in the daughter rediae of an ophthalmo-xiphidiocercaria from *Pomatiopsis lapidaria*." **36** (6, Sect. 1), 548–551.
f. MARTIN, W. E., 1950.—" *Phocitremoides ovale* n.gen., n.sp. (Trematoda : Opisthorchiidae), with observations on its life cycle." **36** (6, Sect. 1), 552–558.
g. TANG, C. C., 1950.—" Studies on the life history of *Eurytrema pancreaticum* Janson, 1889." **36** (6, Sect. 1), 559–573.

comparison of measurements with *S. papillosus, S. robustus, S. ratti* and *S. agoutii*. *Physocephalus sexalatus, Rictularia ondatrae* and *Gongylonema* sp. inq. are new records for this host. R.T.L.

(337b) The thiamine content of *Hymenolepis diminuta* remains fairly constant whether it is present or not in the diet of the host or when it is injected parenterally. It would appear that the worms can obtain thiamine and probably other vitamins from the host's tissues. It is suggested that the anaemia sometimes produced by *Diphyllobothrium latum* may be due to an unusual affinity of that tapeworm for vitamin B_{12} in individuals in whom sub-optimal amounts of antianaemic factor are produced by the liver. R.T.L.

(337c) The daily administration in the grain ration of 1 gm. of phenothiazine to calves with pure infections of *Bunostomum phlebotomum* did not affect egg production, but infective larvae failed to develop in the manure. R.T.L.

(337d) Fully-formed procercoids of *Diphyllobothrium latum* developed experimentally in *Diaptomus piscinae, D. sanguineus, D. mississippiensis* and *Eurytemora affinis*. Early stages only developed in *D. albuquerquensis*. The number of *Diaptomus* species now known to serve experimentally as intermediaries is ten. A table lists the 38 known copepod hosts of *D. latum*. R.T.L.

(337e) The number of *Cercaria pomatiopsidis* produced by daughter rediae is small. Although germinal masses have both unicellular and multicellular components these are completely used up in the production of embryos. When the rediae have reached maturity the average number per daughter redia is 74. This greatly contrasts with the large numbers characteristically produced by plagiorchids but it may be a secondary modification related to the small size of the vector *Pomatiopsis lapidaria*. R.T.L.

(337f) The cercaria Pleurolophocercous II described by Maxon & Pequegnat (1949) from *Cerithidea californica* encysts under the scales of the jacksmelt *Atherinopsis californica* and the southern California kilifish *Fundulus parvipinnis parvipinnis*. Adults, named *Phocitremoides ovale* n.g., n.sp., obtained after experimental feeding in cats and chicks, are illustrated and described. The new genus differs from *Phocitrema* in having one testis, the vitellaria do not extend posterior to the testis and the genital atrium is spacious. It is suggested that *P. ovale* may develop in seals as well as in piscivorous birds. The redia, cercaria and metacercaria are described. The cercaria is similar to that of *Opisthorchis felineus*. This lends support to the placing of Phocitrematinae in Opisthorchiidae. R.T.L.

(337g) *Eurytrema pancreaticum* has been recorded from the ox, water buffalo, sheep and goat in the Malaya archipelago, Philippines, India, Indo-China, China and Japan. It is common in pigs in Hong Kong, less common in camels in North China and in *Macaca syrichta fascicularis*. Tang found naturally infected the two land snails *Bradybaena*

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h. STUNKARD, H. W. & GOSS, L. J., 1950.—" *Eurytrema brumpti* Railliet, Henry and Joyeux, 1912 (Trematoda : Dicrocoeliidae), from the pancreas and liver of African anthropoid apes." **36** (6, Sect. 1), 574–581.
i. RIEDEL, B. B., 1950.—" Sulfonamide therapy of trichinized white mice." **36** (6, Sect. 1), 582–585.
j. MANTER, H. W. & LARSON, M. I., 1950.—" Two new blood flukes from a marine turtle, *Caretta caretta*." **36** (6, Sect. 1), 595–599.
†k. HUNTER, III, G. W., RITCHIE, L. S. & TANABE, H., 1950.—" The epidemiology of schistosome dermatitis ('koganbyo') in Japan." **36** (6, Sect. 2), Suppl. p. 12.

similaris and *Cathaica ravida sieboldtiana*, near Foochow where *E. pancreaticum* is very common. The life-cycle was also studied experimentally and illustrated descriptions are given of the egg, miracidium, mother sporocyst, daughter sporocyst and cercaria which is of a microcercous type. The miracidium hatches after the egg has been eaten by the snail host. The mature daughter sporocysts, each containing from 144 to 218 cercariae, are expelled from the snail. Attempts to infect a goat were not successful and it is not known if a second intermediary is essential. R.T.L.

(337h) *Eurytrema brumpti* which occurred as a massive infection in a gorilla from the Congo is redescribed and illustrated. The morphological and biological limits of the genus *Eurytrema*, its relations to allied genera, its species and the variations within single species are still considered unsolved problems. Further study has shown that *E. vulpis* is a synonym of *E. procyonis*. *E. brumpti* agrees with the characters of the subgenus *Concinnum* as listed by Bhalerao. The bionomic features of the species of *Eurytrema* suggest that it is not a homogeneous group. When the life-cycles of the avian species are discovered, it should be possible to correlate bionomic and morphological data with taxonomic considerations and allow of a proper disposition of the various species of the genus. There was also a large hookworm infection in this gorilla. As the animal was ill, 0·1 c.c. of 1% PPD tuberculin was injected into one eyelid. An oedematous swelling of the eyelid completely closed the eye in a few minutes. It had totally subsided in five hours but at post mortem no evidence of tuberculosis could be found. R.T.L.

(337i) The mortality among control mice infected with *Trichinella spiralis* was heaviest from the 10th to 30th day after infection, whereas in mice treated with sulphonamides the onset of trichinosis was retarded and the mortality was heaviest from the 16th to the 26th day. Neither sulphanilamide nor sulphamerazine was completely effective. A combination of both drugs, each at about the maximum non-toxic level resulted in increased efficacy, the mortality rate being reduced to 17·8% and the larval counts by 67·1% and 79·9%. R.T.L.

(337j) Two new Spirorchidae are reported from *Caretta caretta*. *Neospirorchis pricei* n.sp. differs from *N. schistosomatoides* as follows : there is a shorter oesophagus, the testes extend more anteriorly, the cirrus sac is longer, more slender and thicker walled, the vas deferens is short and inconspicuous, the uterus has a distinct, tightly-spiraled posterior portion, separated from an anterior sac-like portion and the genital pore is ventral. *Carettacola bipora* n.g., n.sp. differs from all known blood flukes in having in addition to the uterine pore a very large and glandular vagina-like structure opening laterally, posterior to the ovary, in the position of Laurer's canal. R.T.L.

(337k) "Paddy itch" due to cercariae of *Gigantobilharzia sturniae* n.sp. is reported from the vicinity of Lake Shinji in Japan. The molluscan vector is *Polypylis hemisphaerula* and the definitive hosts are *Spodiopsar cineracous*, *Passer montanus saturatus* and *Motacilla* (*M.*) *grandis*. The infection reaches the peak of severity from mid-July to mid-August. The incidence in the snail in June was about 5%. Infected birds and snails have also been found in other areas in Japan. R.T.L.

† Abstract of paper presented at the 24th Annual Meeting, American Society of Parasitologists, Cleveland, Ohio, December 27, 28 and 29, 1950.

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†l. HUNTER, III, G. W., RITCHIE, L. S., PAN, C., LIN, S. S., YOKOGAWA, M. & SUGIURA, S., 1950.—" Skin testing for schistosomiasis japonica with antigens from adult worms and cercariae of *S. japonicum*." **36** (6, Sect. 2), Suppl. p. 12.

†m. MOORE, D. V. & MELENEY, H. E., 1950.—" Development of *Schistosoma mansoni* in the peritoneal cavity of mice." **36** (6, Sect. 2), Suppl. p. 12.

†n. CRAM, E. B., 1950.—" Progressive blood changes in experimental infections with *Schistosoma mansoni* in mice." **36** (6, Sect. 2), Suppl. p. 13.

†o. DE WITT, W. B., 1950.—" Eosinophil response of mice to single sex and mixed *Schistosoma japonicum* infections." **36** (6, Sect. 2), Suppl. p. 13.

†p. OLIVIER, L., 1950.—" Some characteristics of early schistosome infections in mice." **36** (6, Sect. 2), Suppl. p. 13.

†q. CORT, W. W., AMEEL, D. J. & VAN DER WOUDE, A., 1950.—" Development of the mother and daughter sporocysts of a snake plagiorchiid, *Lechriorchis primus*." **36** (6, Sect. 2), Suppl. p. 14.

†r. AMEEL, D. J., CORT, W. W. & VAN DER WOUDE, A., 1950.—" Germinal development in the early stages of the mother sporocyst and rediae of *Paragonimus kellicotti*." **36** (6, Sect. 2), Suppl. p. 14.

†s. VAN DER WOUDE, A., 1950.—" Germ cell cycle of *Megalodiscus temperatus* (Stafford, 1905) Harwood, 1932." **36** (6, Sect. 2), Suppl. pp. 14–15.

†t. CHURCHILL, H. M., 1950.—" Germ cell cycle of *Echinostoma revolutum* (Froelich, 1802)." **36** (6, Sect. 2), Suppl. p. 15.

†u. KAGAN, I. G., 1950.—" The life history of *Neoleucochloridium problematicum* (Magath, 1920) new comb. (Trematoda : Brachylaemidae)." **36** (6, Sect. 2), Suppl. p. 15.

(337 l) Intradermal skin tests with 0·01 ml. of a 1 : 10,000 dilution of antigens made from adults and from cercariae of *Schistosoma japonicum* were positive with both antigens in 93% of 103 infected schoolchildren. As extracts of normal snail livers gave two false positives it is concluded that antigen from adults is more satisfactory for general use. R.T.L.

(337m) Sexually mature *Schistosoma mansoni* were found in the peritoneal cavity ten to twelve weeks after intraperitoneal injection of cercariae into mice and were considerably smaller than those found in the portal system six weeks after injection. R.T.L.

(337n) No consistent differences were found in the blood picture of mice infected with Egyptian and Puerto Rican strains of *Schistosoma mansoni*. There was a greater mortality and more severe tissue damage from the Puerto Rican strain. R.T.L.

(337 o) In mice with unisexual infections of *Schistosoma japonicum* the circulating eosinophils were only moderately increased, whereas in mixed infections there was a marked increase apparently associated with the maturing of the worms and egg production. R.T.L.

(337p) In experimental skin infections of mice with schistosome cercariae those of *S. japonicum* and *S. douthitti* produced many distinct pulmonary haemorrhages, but very few worms were recovered from the lungs. The liver was reached relatively early and a large proportion of the cercariae used were recovered as developing worms. The cercariae of *S. mansoni* produced relatively few indistinct lung haemorrhages but were readily recovered from the lungs for a considerable time. Only a small proportion developed in the liver. Infection of the mouse with *S. mansoni* was relatively poor, possibly from physiological incompatibility as it is not a natural host, whereas the other two species commonly infect small rodents. R.T.L.

(337u) *Leucochloridium sorae* is a synonym of *L. problematicum*. The molluscan vectors in Michigan are *Oxyloma retusa* (*Succinea retusa*) and *Quickella* sp.inq. The cercariae, which are tailless, develop in branched sporocysts and encyst in highly coloured red-brown broodsacs. The chicken served as an experimental host but the normal definitive host was not determined. R.T.L.

† Abstract of paper presented at the 24th Annual Meeting, American Society of Parasitologists, Cleveland, Ohio, December 27, 28 and 29, 1950.

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†v. HUNTER, W. S., 1950.—" Contributions to the life history and morphology of *Gynaecotylae adunca* (Linton, 1905)." **36** (6, Sect. 2), Suppl. p. 15.
†w. FISCHTHAL, J. H., 1950.—" New species of rhopalocercous cercariae." **36** (6, Sect. 2), Suppl. pp. 15–16.
†x. ACKERT, J. E. & DEWHIRST, L. W., 1950.—" Resistance of fowls to parasitism affected by female sex hormone." **36** (6, Sect. 2), Suppl. p. 16.
†y. TUGWELL, R. L. & ACKERT, J. E., 1950.—" Further studies on the tissue phase of the life cycle of *Ascaridia galli*." **36** (6, Sect. 2), Suppl. p. 16.
†z. AMEEL, D. J., ELLIOTT, A. & ACKERT, J. E., 1950.—" Relationships of aging, food reserves and infectivity of some ascarid larvae." **36** (6, Sect. 2), Suppl. pp. 16–17.
†ba. RITCHIE, L. S., HUNTER, III, G. W., KAUFMAN, E. H., PAN, C., NAGANO, K. & YOKOGAWA, M., 1950.—" Parasitological studies in the Far East. V. An epidemiologic survey in Okayama Prefecture, Honshu, Japan." **36** (6, Sect. 2), Suppl. p. 17.
†bb. RITCHIE, L. S., HUNTER, III, G. W., PAN, C. & YOKOGAWA, M., 1950.—" Parasitological studies in the Far East. X. An epidemiologic survey on Hokkaido, Japan." **36** (6, Sect. 2), Suppl. p. 17.
†bc. HUNTER, III, G. W., RITCHIE, L. S., PAN, C. & LIN, S., 1950.—" Parasitological studies in the Far East. XI. An epidemiologic survey of Okinawa." **36** (6, Sect. 2), Suppl. pp. 17–18.

(337v) It is confirmed that the metacercariae of *Gynaecotylea adunca* occurs in the fiddler crab *Uca pugillator*. Although probably not definitive hosts in nature, young black skimmers and terns were experimentally infected but lost the infection in a short time. R.T.L.

(337w) Five new species of gorgoderid rhopalocercariae are recorded as occurring in freshwater unionid clams in Michigan and New York. They possess club-shaped tails with a much-pleated cuticle which in water swells into a balloon-like structure into which the body is retracted and encysts. [Although named these cercariae are nomina nuda.] R.T.L.

(337x) Growing chickens attain their maximum resistance to *Ascaridia galli* on reaching sexual maturity. Injection of diethylstilbestrol was found on statistical analysis to increase the resistance of young pullets. R.T.L.

(337y) The majority of young *Ascaridia galli* have their anterior ends buried in the mucous membrane of the small intestine from the 8th to the 17th day of infection after which they make little growth. Others develop normally in the lumen. When the gut is flushed out these diminutive mucosa worms are occasionally found among the lumen worms which have made normal growth. R.T.L.

(337z) The infectivity of the eggs of *Ascaridia galli* remains high until the cultures are 200 days old, but thereafter declines rapidly owing to the loss of the fat reserves. Measurements of the fat-containing areas in the bodies of *Toxocara mystax* and *Toxascaris leonina* larvae, stained with Schlach R, showed a diminution of fat with increased age. R.T.L.

(337ba) Of 1,260 persons in Okayama City and the villages of Notani and Kojo in Okayama Prefecture, Japan, 85·6% had intestinal helminths. The incidence was as follows: Ascaris 51·3%, Trichuris 29·8%, hookworm 45·4%, Enterobius 15·1%, *Trichostrongylus* sp. 1·7%, *Clonorchis sinensis* 16·5% and *Metagonimus yokogawai* 4·1%. Heterophyid eggs of uncertain identity were also encountered. In Notani the incidence of hookworm was 68·4% and in Kojo that of *C. sinensis* was 40·3%. R.T.L.

(337bb) Of 2,211 persons in Hokkaido Island, Japan, 79·3% had intestinal helminths. The incidence was: Ascaris 68·1%, Trichuris 29·4%, hookworm 1·9%, Enterobius 48·4%, *Trichostrongylus* sp. 16·9%, *Strongyloides stercoralis* 0·2%, *Clonorchis sinensis* 0·5%, *Metagonimus yokogawai* 0·1% and *Hymenolepis nana* 0·1%. The presence of hookworm in the relatively cold climate of Hokkaido is noteworthy. R.T.L.

(337bc) Of 2,172 natives of Okinawa 88% had intestinal helminths. The incidence was: Ascaris 48·1%, Trichuris 20·1%, hookworm 71·8%, Enterobius 18·7%, *Trichostrongylus*

† Abstract of paper presented at the 24th Annual Meeting, American Society of Parasitologists, Cleveland, Ohio, December 27, 28 and 19, 1950.

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†bd. RITCHIE, L. S., HUNTER, III, G. W., PAN, C. & NAGANO, K., 1950.—" The distribution of the snail intermediate host of *Schistosoma japonicum* (*Oncomelania nosophora*) along the Tone river, Japan." 36 (6, Sect. 2), Suppl. p. 18.

†be. SELF, J. T., 1950.—" Parasites of the goldeye, *Amphiodon alosoides*, in Lake Texoma." 36 (6, Sect. 2), Suppl. p. 18.

†bf. GOODMAN, J. D., 1950.—" Life history contributions to the subfamily Ochetosomatinae Leão, 1944 (Reniferinae Pratt, 1902)." 36 (6, Sect. 2), Suppl. pp. 18–19.

†bg. NAJIM, A. T., 1950.—" *Gigantobilharzia huronensis* sp.nov., a bird blood-fluke from the goldfinch." 36 (6, Sect. 2), Suppl. p. 19.

†bh. KAGAN, I. G., 1950.—" Revision of the subfamily Leucochloridiinae (Trematoda: Brachylaemidae)." 36 (6, Sect. 2), Suppl. p. 19.

†bi. MEYER, M. C., 1950.—" Erratic hirudiniasis in a lake trout (*Cristivomer namaycush*)." 36 (6, Sect. 2), Suppl. p. 20.

sp. 1·8%, *Strongyloides stercoralis* 11·9%, and *Clonorchis sinensis* 0·6%. There were also occasional cases of *Paragonimus westermani, Heterophyes* sp., *Hymenolepis nana* and *H. diminuta*. Of 1,262 persons examined for filariasis the blood of 9·6% showed *Wuchereria bancrofti* infection, with 28·1% at Kadena. None of the 340 American occupation personnel who had been for less than three months on Okinawa showed any helminth infection. In those who had been there longer the incidence was Ascaris 0·6%, Trichuris 1·9%, hookworm 25%, *S. stercoralis* 0·6%. R.T.L.

(337be) Two species of *Crepidostomum* and tapeworms of the genus *Bothriocephalus* are recorded [but not identified] from the goldeye fish, *Amphiodon alosoides*, in Lake Texoma. R.T.L.

(337bf) The genus *Natriodera* is transferred from Ochetosomatinae to a separate subfamily [unnamed] with *Macrodera* in the Plagiorchiidae. The genera *Ochetosoma, Stomatrema, Neorenifer, Lechriorchis, Dasymetra, Pneumatophilus* and *Zeugorchis* have similar life-history stages. The miracidia readily infect *Physa* spp. and in sporocysts produce xiphidiocercariae of the Armatae type. The cercariae encyst in tadpoles and the metacercariae become infective for snakes in about three weeks. Those of *Dasytrema* and *Pneumatophilus* caused death in a few hours to several days. With those of *Neorenifer* and *Stomatrema* the effects were less severe. R.T.L.

(337bg) The goldfinch *Spinus tristis tristis* is infected in nature with *Gigantobilharzia huronensis* n.sp. Canaries and chicks were experimentally infected with cercariae from *Physa* cf. *gyrina* from the Huron River near Ann Arbor, Michigan. Cercariae are liberated from the snail 24 days after infection and eggs appear in the faeces of the definitive host in 31 to 38 days. Males measure 9·6 mm. Testes are numerous, round to oval and close together. There is a large spinous cirrus. Females measure from 18 to 29 mm. A Laurer's canal is present. In both sexes suckers are absent. R.T.L.

(337bh) Kagan considers that a systematic revision of Leucochloridiinae is necessary. *Leucochloridium* should be divided into *Urogonimus, Leucochloridium* and *Neoleucochloridium* n.g. and with *Urotocus* form this subfamily, from which *Panopistus* and *Urorygma* are excluded. *Urogonimus* is a valid genus and not a synonym of *Leucochloridium*. Four species formerly considered synonymous with *Urogonimus macrostomus* are now revived and two are renamed, viz. *U. witenbergiella* n.sp. for *L. macrostomum* of Witenberg, 1925, and *L. heckerti* n.sp. for *D. macrostomum* of Heckert, 1899. R.T.L.

(337bi) *Nephelopsis obscura*, a leech which normally feeds on aquatic oligochaetes and insect larvae, was dissected out of the air bladder of a lake trout, *Cristivomer namaycush*, from Jackson Lake, Wyoming. It had apparently entered through the pneumatic duct, despite the relatively small diameter of the duct. R.T.L.

† Abstract of paper presented at the 24th Annual Meeting, American Society of Parasitologists, Cleveland, Ohio, December 27, 28 and 29, 1950.

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†bj. ULMER, M. J., 1950.—" A new secondary intermediate host for *Postharmostomum helicis* (Trematoda : Brachylaemidae)." **36** (6, Sect. 2), Suppl. p. 20.

†bk. McINTOSH, A., 1950.—" *Brachylaima rauschi* n.sp. from an Arctic lemming, *Dicrostonyx groenlandicus rubricatus* (Richardson, 1839)." **36** (6, Sect. 2), Suppl. p. 20.

†bl. HUNT, J. S., 1950.—" Life history of gordoderid trematode from *Rana clamitans*." **36** (6, Sect. 2), Suppl. p. 27.

†bm. CABLE, R. M., 1950.—" An 'acanthocolpid ' trematode from the sturgeon of the Wabash River." **36** (6, Sect. 2), Suppl. p. 27.

†bn. PERKINS, K. W., 1950.—" Studies on the biology of *Acetodextra amiuri* (Stafford, 1900) (Trematoda : Heterophyidae)." **36** (6, Sect. 2), Suppl. p. 27.

†bo. CHURCHILL, H. M., 1950.—" Sporocyst of *Echinostoma revolutum* (Froelich, 1802)." **36** (6, Sect. 2), Suppl. pp. 27–28.

†bp. FISCHTHAL, J. H., 1950.—" A new genus and species of Caryophyllaeidae (Cestoda) from fishes." **36** (6, Sect. 2), Suppl. p. 28.

†bq. ULMER, M. J., 1950.—" A precociously developed brachylaemid metacercaria within a sporocyst." **36** (6, Sect. 2), Suppl. p. 28.

†br. WOODHEAD, A. E., 1950.—" Germ cell cycle in the trematode family Brachylaemidae." **36** (6, Sect. 2), Suppl. p. 28.

†bs. SPRENT, J. F. A., 1950.—" Observations on the life history of *Ascaris columnaris*." **36** (6, Sect. 2), Suppl. p. 29.

(337bj) The metacercariae of *Postharmostomum helicis* were present in the pericardial cavity of *Stenotrema monodon*. This brings up to twelve the total number of land molluscs which can serve as secondary hosts for this parasite. R.T.L.

(337bk) *Brachylaima rauschi* n.sp. is described from *Dicrostonyx groenlandicus rubricatus* in Alaska. R.T.L.

(337bl) Adults [undescribed] of a gorgoderid trematode [unnamed] were obtained from the urinary bladder of *Rana clamitans* after experimental feeding of metacercariae in naiads, crayfish and larvae of *Sialis* sp. which had been experimentally fed on cercariae from the clam *Sphaerium simile*. R.T.L.

(337bm) A trematode [unidentified] is reported from the spiral valve of a sturgeon in Indiana. R.T.L.

(337bn) Large numbers of *Acetodextra amiuri* have been found in the ovaries of catfish. Young worms were observed within the eggs. Apparently the gravid trematodes are expelled when the fish spawns. In water the uterus ruptures through the dorsal body wall and the eggs are discharged with considerable force. R.T.L.

(337bo) The life-cycle of *Echinostoma revolutum* was completed experimentally in *Helisoma trivolvis*. The miracidium did not metamorphose into a redia as Johnson reported in 1920, but into a sporocyst. R.T.L.

(337bp) *Pliovitellaria wisconsinensis* n.g., n.sp., an unsegmented tapeworm found in cyprinid fishes in north-west Wisconsin, is described and placed in the Caryophyllaeinae, the diagnosis of which is slightly emended. R.T.L.

(337bq) The sporocyst, cercarial and metacercarial stages of a brachylaemid differing from *Postharmostomum helicis* occur in the land snail *Anguispira alternata*. Its sporocysts occasionally contain large metacercariae which lack a caudal appendage. R.T.L.

(337bs) The larvae of *Ascaris columnaris*, during their migration in experimentally infected white mice, remain the same size for the first eight days after infection and pass from the lungs by the general circulation to various organs of the body where they become encapsulated in the tissues. There they remain alive for five months and grow to 1·8 mm.

† Abstract of paper presented at the 24th Annual Meeting, American Society of Parasitologists, Cleveland, Ohio, December 27, 28 and 29, 1950.

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†bt. CHITWOOD, M. B. & McINTOSH, A., 1950.—" An American host record for the Russian sturgeon nematode, *Cystoopsis acipenseri* Wagner, 1868." **36** (6, Sect. 2), Suppl. p. 29.

†bu. GIBSON, C. L., 1950.—" The early developmental stages of *Onchocerca volvulus* in Guatemalan species of *Simulium*." **36** (6, Sect. 2), Suppl. p. 29.

†bv. BULLOCK, W. L. & GANGI, D. P., 1950.—" The distribution of alkaline glycerophosphatase in the muscle of rats infected with *Trichinella spiralis*." **36** (6, Sect. 2), Suppl. p. 30.

†bw. MELVIN, D. M., 1950.—" The life-cycle of *Monoecocestus sigmodontis* (Cestoda : Anoplocephalidae) from the cotton rat (*Sigmodon hispidus*)." **36** (6, Sect. 2), Suppl. p. 30.

†bx. SCHILLER, E. L. & RAUSCH, R., 1950.—" A vole (*Microtus*) an important natural intermediate host of *Echinococcus granulosus*." **36** (6, Sect. 2), Suppl. p. 30.

†by. BAILEY, W. S., 1950.—" Studies on the host-parasite relations of *Hymenolepis nana* var. *fraterna*." **36** (6, Sect. 2), Suppl. p. 31.

in length. They survive for several days in putrifying mouse carcasses, refrigeration up to four weeks at −20°C., and peptic digestion. Previous infection with *A. columnaris* produced resistance to infection with *A. lumbricoides*. Adult *A. columnaris* were found in *Mephitis m. mephitis, Martes a. americana, Martes p. pennanti* and *Euarctos a. americanus*. R.T.L.

(337bu) Less than 1% of wild *Simulium* spp. showed developmental forms of *Onchocerca volvulus*, whereas up to 15% became infected after feeding on human subjects. A heavy mortality apparently due to hyperinfection occurred on the second and third days after feeding. Larval development apparently reaches the infective stage about the eighth day. R.T.L.

(337bv) In rats infected with *Trichinella spiralis* the Gomori technique showed that there was an intense concentration of alkaline glycerophosphatase in the degenerating muscle tissue associated with the inner cyst wall, from the 12th to the 44th day after infection. The eosinophils in the neighbourhood of infected muscle fibres also gave a pronounced positive reaction for alkaline phosphatase, whereas those more remote were negative. This presence of phosphatase suggests some metabolic change in the eosinophils in their role in the infiltration processes. R.T.L.

(337bw) Oribatid mites are intermediate hosts of *Monoecocestus sigmodontis*. Mature cysticercoids were found in six species of oribatids seven to eight weeks after feeding on the eggs of *M. sigmodontis* from infected cotton-rats. Eggs appeared in the faeces of the rats in about eight weeks. R.T.L.

(337bx) *Echinococcus granulosus* was found in five out of seven arctic foxes, *Alopex lagopus*, on St. Lawrence Island, and hydatid cysts were found in the liver and mesenteries of 14 out of 587 tundra voles, *Microtus oeconomus innitus*. It is suggested that the arctic fox-vole-green plant-human relationships play an important part in maintaining hydatid infections on the Island, as 20% of 126 persons at Gambell and 26% of those at Savoonga gave positive results to skin tests with a non-specific antigen. R.T.L.

(337by) The cysticercoids recovered from 228 out of 367 *Tenebrio molitor* exposed to eggs of *Hymenolepis nana* var. *fraterna* differed greatly in morphology from those which developed in the mouse intestine, especially in the size and structure of the wall surrounding the scolex and in the presence of a characteristic caudal vesicle. 81% developed into adults when fed to uninfected mice. The immunity following the development of cysticercoids in the duct wall did not prevent later infection by cysticercoids from the beetles, nor did the adult worms which developed from the beetle cysticercoids prevent the establishment of a second infection from the same source. R.T.L.

† Abstract of paper presented at the 24th Annual Meeting, American Society of Parasitologists, Cleveland, Ohio, December 27, 28 and 29, 1950.

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†bz. VEGORS, H. H. & PORTER, D. A., 1950.—" Studies on the life history and pathogenicity of the intestinal nematode, *Strongyloides papillosus* in calves." 36 (6, Sect. 2), Suppl. p. 33.
†ca. JASKOSKI, B. J., 1950.—" The role of the protein coat in the development of the ova of *Ascaris lumbricoides* var. *suum*." 36 (6, Sect. 2), Suppl. p. 33.
†cb. SCHWARTZ, B., FOSTER, A. O., PETERMAN, J. E., WILBUR, Jr., J. L. & KATES, K. C., 1950.—" An outbreak of parasitic gastroenteritis in feedlot lambs." 36 (6, Sect. 2), Suppl. pp. 33–34.
†cc. SCOTT, J. A., 1950.—" A description of the larval stages of *Litomosoides carinii* occurring in the intermediate host." 36 (6, Sect. 2), Suppl. p. 34.
†cd. JACHOWSKI, Jr., L. A., OTTO, G. F. & WHARTON, J. D., 1950.—" Filariasis in American Samoa I. Persistence of microfilariae in individuals not exposed to reinfection." 36 (6, Sect. 2), Suppl. p. 34.
†ce. DROPKIN, V. H., 1950.—" Isolation cultures of *Neoaplectana glaseri*." 36 (6, Sect. 2), Suppl. p.34.
†cf. LEVINE, N. D., 1950.—" The effects of some iodine compounds on horse strongyle larvae in manure." 36 (6, Sect. 2), Suppl. pp. 34–35.

(337bz) Calves were infected with *Strongyloides papillosus* more readily through the skin than by the mouth. The first application of the larvae to the skin caused slight local inflammation, but re-exposure resulted in oedema with serum exudation and scab formation. Seven out of twelve calves died after exposure to large numbers of larvae. In heavily infected calves the daily gains were 33% to 79% less than in uninfected controls. The clinical symptoms were intermittent diarrhoea, mucus and blood in the faeces, loss of appetite, loss of condition and retarded growth. R.T.L.

(337ca) Of certain commercial detergents which completely inhibited cleavage in the ova of *Ascaris lumbricoides*, a combination of 5% Duponol 80 plus 1% phenol was the most effective. The inhibitory effect was enhanced by a temperature above 31·1°C. 5% Duponol 80 was the most effective solution tested to induce *in vitro* hatching. R.T.L.

(337cb) Parasitic gastro-enteritis recently caused loss of 2,200 out of 17,000 lambs at a Nebraskan establishment. The losses were in the lambs which had been grazed for successive periods of 2–3 weeks on 20-acre alfalfa pastures, and the peak coincided with second cropping after the pastures had been rested for 2–3 weeks. R.T.L.

(337cc) Scott has traced the complete life-cycle of *Litomosoides carinii*. The cycle in the mite vector is usually completed in about 15 days at 25°C. Microfilariae appear in the peripheral blood of the cotton-rat about 51 days after infection. R.T.L.

(337cd) Evidence is given that microfilaraemia of *Wuchereria bancrofti* may persist for at least five years without exposure to reinfection and that the microfilariae disappear within ten years after the last infection. R.T.L.

(337ce) For the study of the genetics of *Neoaplectana glaseri* the best results were obtained by a non-sterile technique. The medium, on microscope slides kept in moist chambers, consisted of a drop of 1% agar in which a small piece of fresh rat kidney was embedded. Fifteen out of 21 F-1 females produced F-2 offspring, of which eight grew to adult stage, but no F-3 offspring have yet been produced R.T.L.

(337cf) Inorganic aliphatic or other iodine compounds in which the iodine was not attached to a ring carbon atom were more active against horse strongyle larvae in manure than were aryl or heterocyclic iodine compounds in which the iodine was attached directly. Twenty-two of these compounds which prevented the development of larvae at a concentration of 0·0005 M. or less are named. R.T.L.

† Abstract of paper presented at the 24th Annual Meeting, American Society of Parasitologists, Cleveland, Ohio, December 27, 28 and 29, 1950.

337—Journal of Parasitology (cont.)

†cg. MAYHEW, R. L., 1950.—" Results of additional experiments in which small amounts of phenothiazine was fed in pure infections of the nodular worm in calves." **36** (6, Sect. 2), Suppl. p. 35.

†ch. MAYHEW, R. L., 1950.—" A preliminary report on feeding small amounts of phenothiazine during the prepatent period in pure infection of the nodular worm in calves." **36** (6, Sect. 2), Suppl. p. 35.

†ci. RIEDEL, B. B., 1950.—" The use of sulfonamides for the control of trichinosis in white mice." **36** (6, Sect. 2), Suppl. pp. 35–36.

†cj. LINDQUIST, W. D. & HITCHCOCK, D. J., 1950.—" Studies on infections of a caecal worm, *Paraspidodera uncinata*, in guinea pigs." **36** (6, Sect. 2), Suppl. pp. 37–38.

†ck. BAIR, T. D., 1950.—" Oxygen consumption related to oxygen tension in *Rhabditis strongyloides* and other nematodes." **36** (6, Sect. 2), Suppl. p. 38.

(337cg) A calf with *Oesophagostomum radiatum* which had given negative faeces as a result of feeding 0·5 gm. of phenothiazine daily for 14 days became positive again after six weeks. Six calves then became infected from this animal during a period of 4½ months. In two calves, all the eggs became abnormal after 0·5 gm. phenothiazine had been given for seven days, but the production of eggs continued and these rapidly became normal again. In further experiments with 0·3 gm., 0·4 gm. and 0·5 gm. the eggs became abnormal but rapidly returned to normal when these daily doses ceased. In one calf in which the treatment was continued for successive seven-day periods with daily doses of 0·5 gm., 0·6 gm. and 0·7 gm. the eggs became abnormal but the faeces did not become negative. In another series, 0·5 gm. was given daily for 7, 10, 12 and 14 days. In every case the eggs became abnormal but only in the fourteen-day experiment did the faeces become free from eggs. R.T.L.

(337ch) Thirty-eight days after two calves had been experimentally infected with *Oesophagostomum radiatum*, the faeces contained eggs although 1·5 gm. of phenothiazine had been given during the first two weeks of the prepatent period. No symptoms of parasitism were observed. In another calf the phenothiazine was administered during the second two weeks of the prepatent period. Eggs appeared in the faeces for the first time on the 51st day after the infection. The number of eggs present remained relatively low during the succeeding eight weeks. R.T.L.

(337ci) There was no larval reduction in mice experimentally infected with 125 ±5 *Trichinella spiralis* larvae and continuously fed with 0·25% sulphaquinoxaline for 30 days. There was a reduction of 54·5% when infected animals were given 2% of sulphanilamide and of 55·8% with 1·5% of sulphamerazine. A combination of 2% sulphanilamide and 1% sulphamerazine reduced the larval count by 73%. The mortality rate was reduced to 17·8% by a combined treatment of sulphanilamide (2%) and sulphamerazine (1·5%) when injected by a stomach tube directly into the stomach of mice which had received a lethal dose of 1,300 Trichinella larvae, and the period of mortality was definitely shortened. R.T.L.

(337cj) The prepatent period of *Paraspidodera uncinata* in guinea-pigs ranged from 12 to 39 days in infections acquired under conditions which precluded reinfection. Faecal examinations of naturally and of experimentally infected animals all yielded only small numbers of eggs. R.T.L.

(337ck) *Rhabditis strongyloides*, a semi-parasitic form isolated from pustules in the skin of a cow, when tested by a micro-Winkler method, was found to have a critical tension of 2 c.c. of oxygen per litre. *Rhabditis* sp. from the soil gave a critical tension of 4 c.c. of oxygen per litre. The oxygen consumption of infective strongyle larvae from a horse was extremely small. R.T.L.

† Abstract of paper presented at the 24th Annual Meeting, Amercian Society of Parasitologists, Cleveland, Ohio, December 27, 28 and 29, 1950.

337—Journal of Parasitology (cont.)

†cl. GAAFAR, S. M. & ACKERT, J. E., 1950.—"Deficiencies of certain minerals as factors in resistance of chickens to parasitism." 36 (6, Sect. 2), Suppl. p. 38.
†cm. DURBIN, C., 1950.—"*Protostrongylus rufescens* in domestic sheep, *Ovis aries*, in the United States." 36 (6, Sect. 2), Suppl. p. 38.
†cn. FAIRBAIRN, D., 1950.—"An improved method for the complete elimination of micro-organisms from *Ascaris lumbricoides*." 36 (6, Sect. 2), Suppl. p. 39.
†co. REESAL, M. R., 1950.—"Observations on the path of larvae of *Strongyloides agoutii* in the guinea pig and the effectiveness of the method of inoculation." 36 (6, Sect. 2), Suppl. p. 39.
†cp. BAUGHN, C., 1950.—"The effect of oral DDD (TDE) on natural resistance of mice to infection with *Trichinella spiralis*." 36 (6, Sect. 2), Suppl. p. 39.
†cq. HENDRICKS, J. R., 1950.—"The effect of body weight on the natural resistance of mice to *Trichinella spiralis*." 36 (6, Sect. 2), Suppl. pp. 39–40.
†cr. PETRI, L. H. & AMEEL, D. J., 1950.—"Studies on the life cycle of *Physaloptera rara* Hall and Wigdor, 1918, and *Physaloptera praeputialis* Linstow, 1889." 36 (6, Sect. 2), Suppl. p. 40.

(337cl) Groups of fowls on a low phosphorus ration and groups of chickens on a low calcium diet showed significantly fewer and shorter *Ascaridia galli* than those on adequate diets. Manganese has a minor, if not neutral, role in fowl ascarid parasitism for the host chickens thrived normally without the addition of manganese sulphate to the ration. R.T.L.

(337cm) The occurrence of heavy infections with *Protostrongylus rufescens* in sheep in Virginia and Wyoming suggests that the distribution of this parasite is wider in domesticated sheep in the U.S.A. than published reports would indicate. *Muellerius minutissimus* occurred in two sheep in Wyoming. R.T.L.

(337cn) Micro-organisms are eliminated from 80% to 90% of *Ascaris lumbricoides* in the two weeks during which the worms can be maintained alive *in vitro*, if kept in nutrient broth in which a mixture of acriflavine, azochloramide, streptomycin and penicillin are dissolved. The sodium chloride required to make the solution isotonic is replaced by glucose. There are other minor alterations in technique not included in this preliminary note. [For further details, see No. 405b below.] R.T.L.

(337co) Experiments with *Strongyloides agoutii* are cited which suggest that migration within the host is a biological necessity no matter how the larvae are introduced. Maturity was reached by 22% of the larvae placed on the buccal mucosa of an anaesthetized guinea-pig, by 6% after oral infection, by 0·2% after direct stomach infection and by 12–16% after percutaneous infection. R.T.L.

(337cp) A 1 : 10 solution of DDD in corn oil given to mice at a daily rate of 0·1 c.c. for three weeks did not protect them against subsequent experimental infection with *Trichinella spiralis*. R.T.L.

(337cq) That mice nursed by rat mothers grow faster than mice nursed by mouse mothers, presumably because of the greater quantity of milk provided, was successfully used to show that body-weight *per se* increases resistance to *Trichinella spiralis* infection. R.T.L.

(337cr) *Blatella germanica* has been successfully used as an intermediate host for *Physaloptera rara* and for *P. praeputialis*. *P. rara* was obtained from kittens, dog and coyote after feeding with experimentally infected cockroaches. Third-stage larvae of *P. rara* were also produced in field crickets (*Gryllus assimilis*), flour beetles (*Tribolium confusum*) and ground beetles (*Harpalus* sp.), and those of *P. praeputialis* in *B. germanica*, *Centophilus* sp. and *G. assimilis*. R.T.L.

† Abstract of paper presented at the 24th Annual Meeting, American Society of Parasitologists, Cleveland, Ohio, December 27, 28 and 29, 1950.

337—Journal of Parasitology (cont.)

†cs. WALTON, A. C., 1950.—"Parasites of the Brevicipitidae (Amphibia)." **36** (6, Sect. 2), Suppl. p. 40.

†ct. WALTON, A. C., 1950.—"Parasites of the Amphibia. Nematoda. I." **36** (6, Sect. 2), Suppl. pp. 40–41.

†cu. WALTON, A. C., 1950.—"Parasites of the Amphibia. Nematoda. II." **36** (6, Sect. 2), Suppl. p. 41.

†cv. SNEED, K. E., 1950.—"The genus *Corallobothrium* from catfishes in Lake Texoma, Oklahoma, with a description of two new species." **36** (6, Sect. 2), Suppl. p. 43.

†cw. SEAMSTER, A. & BAUGHMAN, J., 1950.—"Parasites of 17 species of sharks from the Gulf of Mexico." **36** (6, Sect. 2), Suppl. pp. 43–44.

†cx. BECK, J. W. & CHANDLER, A. C., 1950.—"Experiments on the nutrition and host relations of *Hymenolepis diminuta* in white rats, with special reference to vitamins and hormones." **36** (6, Sect. 2), Suppl. p. 44.

†cy. THOMAS, L. J., 1950.—"Ecological relationships of tapeworms (Diphyllobothriidae) to the infection of fish and fish-eating birds of the Great Lakes region." **36** (6, Sect. 2), Suppl. p. 44.

†cz. DE GIUSTI, D. L., 1950.—"Some anomalies observed in developmental stages of the Diphyllobothriidae." **36** (6, Sect. 2), Suppl. p. 44.

†da. HUSSEY, K. L., 1950.—"A comparative study of the coracidia and procercoids of pseudophyllideans of the Great Lakes region." **36** (6, Sect. 2), Suppl. p. 44.

†db. HANSEN, M. F., TODD, A. C. & KELLEY, G. W., 1950.—"Effects of a pure infection of the tapeworm *Moniezia expansa*, on lambs." **36** (6, Sect. 2), Suppl. p. 45.

†dc. KATES, K. C. & McINTOSH, A., 1950.—"The embryonic hooks of some anoplocephalid cestodes of mammals." **36** (6, Sect. 2), Suppl. p. 45.

(337cv) *Corallobothrium procerum* n.sp. from the blue catfish *Ictalurus furcatus*, and *C. thompsoni* n.sp. from *I. lacustris* are briefly described and differentiated from each other [but not from other species of the genus]. R.T.L.

(337cw) Of the 20 helminth species hitherto recorded in the literature for the hammerhead shark, *Sphyrna zygaena*, 14 are cestodes, four are nematodes and two are trematodes. R.T.L.

(337cy) Thomas summarizes the various factors upon which the heavy diphyllobothriid infection of fish and fish-eating birds in the Great Lakes region is dependent. R.T.L.

(337cz) De Giusti has found (i) a coracidium with 12 hooklets, (ii) a plerocercoid with a normal scolex and three other scolices budding from the posterior end, and (iii) a *Schistocephalus* procercoid with a double body and two cercomers. R.T.L.

(337da) The coracidium of *Schistocephalus* can be differentiated from that of *Diphyllobothrium* by its more rapid and directional swimming, the greater average number of "plastinzellen" and the greater length and coiling of the excretory tubes. The procercoid of *Schistocephalus* is more active and develops more rapidly than that of *Diphyllobothrium*. R.T.L.

(337db) [This is an abstract of a paper already published under the same title as *Bull. Ky agric. Exp. Sta.*, No. 556. For abstract see No. 296a above.]

(337dc) The morphology and measurements of the onchosphere hooks of anoplocephalid cestodes provide a means for identifying the various species in the intermediate host and may prove indicative of their phylogenetic relationships. Details are given of the onchospheres of *Anoplocephala magna, Monoecocestus americanus, Moniezia expansa, M. benedeni, Thysanosoma actinioides* and *Wyominia tetoni*. R.T.L.

† Abstract of paper presented at the 24th Annual Meeting, American Society of Parasitologists, Cleveland, Ohio, December 27, 28 and 29, 1950.

337—Journal of Parasitology (cont.)

†dd. ALLEN, R. W. & KYLES, P. M., 1950.—" The pathologic changes associated with *Thysanosoma actinioides*." 36 (6, Sect. 2), Suppl. p. 45.

†de. LARSH, Jr., J. E., 1950.—" The effects of protein-deficient diet on resistance of mice to *Hymenolepis* infection." 36 (6, Sect. 2), Suppl. pp. 45–46.

(377dd) *Thysanosoma actinioides* causes dilatation, thickening and occasionally occlusion of the bile ducts. The bile may be turbid and the duct wall inflammed and hyperaemic. In the cases studied the duct wall was fibrosed and there was a proliferation of ducts and hyperplasia of the epithelium, lymphocytic infiltration and necrosis. Bacterial invasion of the tissues had occurred. It was not clear if the worms were the primary or secondary cause of these changes. R.T.L.

(337de) In mice on a protein deficient diet there is a reduction in natural resistance, and interference with the development of acquired resistance, to infection with *Hymenolepis nana* var. *fraterna*. R.T.L.

338—Journal de Radiologie et d'Électrologie.

a. CORDOBA, S., 1950.—" Ascaridiose intestinale." 31 (1/2), 96–97.

(338a) Cordoba publishes two X-ray photographs showing *Ascaris lumbricoides* in the human intestine. He recommends that photographs should be made two and four hours after an opaque meal has been given. In cases harbouring Ascaris, small opaque spots of 1 mm. or 2 mm. are often seen and are due to pathological conditions caused by avitaminosis which often accompanies Ascaris infection. The shadows which are characteristic of Ascaris infection are parallel lines more or less curved which represent the opaque substance surrounding the worms. Sometimes the Ascaris intestine is represented by a fixed line but this is much less characteristic and seldom seen. R.T.L.

339—Journal of the Royal Egyptian Medical Association.

a. SOUIDAN, M. Z. A., 1950.—" Miracil D the new anti-bilharzial treatment. Study of toxicity—antitoxic action of atropine." 33 (7), 667–676.

b. NOR EL DIN, G. & DAWOOD, M., 1950.—" Observations on the side-effects of miracil D." 33 (7), 688–693.

c. KIKUTH, W., 1950.—" Experimental tests with the new schistosomiasis remedy miracil." 33 (7), 709–719.

(339a) In dogs, Souidan has studied experimentally the toxicity of miracil-D when injected intravenously and into the carotid artery. Very large doses (up to 1 gm. per kg. body-weight) if injected slowly, are without marked immediate toxic symptoms. One mg. of atropine protects from the deleterious effect of intravenous injection on the circulation. Glucose improves the circulation but not to the same extent as atropine. In his view the nervous symptoms caused by miracil-D are due possibly to vagal stimulation, not to hypoglycaemia since no change occurs in the blood sugar level. Experimentally atropine proved a good antidote for the acute symptoms and is considered of value. Late toxic symptoms are probably allergic reactions to the disintegrating schistosomes and can be lessened or checked by antihistamine drugs. R.T.L.

(339b) Of 23 schistosomiasis cases treated with miracil-D, 13 complained of giddiness. The symptoms usually occurred on the 2nd day of the administration of the drug and disappeared on about the 4th day. Anorexia was present in nine cases. Vomiting occurred in nine cases of which two had haematemesis. Seven patients had epigastric pain and three had diarrhoea with abdominal colic. There was distress and insomnia in five cases. One patient had urticaria with fever three days after the commencement of

† Abstract of paper presented at the 24th Annual Meeting, American Society of Parasitologists, Cleveland, Ohio, December 27, 28 and 29, 1950.

treatment. There was no evidence of toxic effects on the liver or kidneys. Some cases showed a rise in the eosinophil count. R.T.L.

(339c) Kikuth summarizes the early steps which led him to the discovery of miracil-D as a cure for schistosomiasis and describes the mechanism of its action. Effective dosages cause the worms to leave their locations in the mesenteric and portal veins and penetrate into the branches of the portal vein in the liver. The damaged worms are probably carried there passively. The worms become sluggish and limp, the sexes are separated and their appearance changes. The body assumes a milky, clouded appearance and diminishes in size. The maturing cells of the testes, ovary and vitelline glands diminish and finally vanish. Mitosis is inhibited and Gönnert believes that miracil acts by directly damaging the nucleus. Egg production ceases a few days after the commencement of treatment. If sufficient miracil-D is not given, the worms gradually recover. R.T.L.

340—Journal of the Royal Society of Arts.

a. BIRCH, A. J., 1950.—" Parasite germination factors." 99 (4836), 104–105.

(340a) Birch briefly refers to the investigations now in progress in England to isolate the "hatching factor" diffused by solanaceous plants. A resinous acid has been extracted which is capable of causing hatching of the larvae from dormant cysts of *Heterodera rostochiensis* even when dissolved in 10 million parts of water. Some of the atomic groups in the molecule have been identified and simple substances containing these have been found to be active although much less so than the naturally produced hatching factor. It is suggested that if such a synthetic substance could be produced cheaply it could be applied to eelworm infested soil to cause the larvae to hatch, and that in the absence of a suitable host crop this would result in their death from starvation and save millions of pounds annually in Britain. R.T.L.

341—Journal of the Science of Food and Agriculture. London.

a. LUBATTI, O. F. & BLACKITH, R. E., 1950.—" Fumigation of agricultural products. II. Susceptibility of seed potatoes to the vapour of methyl bromide." 1 (8), 240–244.

(341a) The concentration of methyl bromide required to kill *Heterodera rostochiensis* lies on the border line beyond which lasting damage may be caused to seed potatoes. Losses are much less severe when fumigation is done in the autumn than immediately before planting in the spring when the tubers are able to reverse much of the phytotoxic action of the fumigant. R.T.L.

342—Journal of the South African Veterinary Medical Association.

a. DALY, L. L., 1950.—" Some veterinary problems of the state veterinarian in Natal." 21 (4), 141–154.

b. DE VILLIERS, S. W., 1950.—" The treatment of ' gid ' in sheep." 21 (4), 155–157.

(342a) *Stephanurus dentatus* has been found in pigs on two farms in the Highflats of Natal. *Syngamus trachea* has occurred on two poultry farms in the Durban district. R.T.L.

(342b) Thirty-nine out of 63 sheep with *Coenurus cerebralis* fully recovered after aspiration of the cyst with a sterilized needle. Twelve of the remainder died but in 12 others the "gid" symptoms recurred. The site of the cyst was determined by palpation. The overlying bone yielded to pressure, but only in sheep up to 18 months of age and not in sheep with four teeth or over. At post mortem the drained cyst was partially collapsed, the cyst wall was thickened and wrinkled. The scolices were everted but healthy. For every infected sheep with over four teeth there were approximately 20 infected sheep with two teeth or under on a group of eight farms in the Britstown district, with an approximate total of 15,000 sheep. R.T.L.

343—Journal of Tropical Medicine and Hygiene.

a. MOST, H., 1950.—"Recent advances in the therapy of the more common protozoan and helminthic infections of man." 53 (7), 145–156.
b. JELLIFFE, D. B., 1950.—"Calcification of a guinea-worm." 53 (11), 210–211.
c. WATSON, J. M. & PRINGLE, G., 1950.—"Clinical investigations on the chemotherapeutic treatment of urinary bilharziasis. Part I—Intravenous trivalent sodium antimony gluconate." 53 (12), 233–238.

(343a) [This paper is reprinted from *Bull. N.Y. Acad. Med.*, 1949, 25 (11), 717–740.]

(343c) Five patients suffering from urinary schistosomiasis were cured by intravenous injections of six daily doses, each of 3 ml., of a new drug, trivalent sodium antimony gluconate. Haematuria rapidly disappeared and living eggs were absent from the urine after the first post-treatment week. None relapsed within three months. The new drug is less unpleasant and possibly more efficient than the other trivalent antimonials. R.T.L.

344—Journal of the University of Bombay. Section A, Physical Sciences.

a. IRANI, K. R., PHALNIKAR, N. L., NARGUND, K. S., PATEL, N. Z. & CHIPALKATI, H. R., 1950.—"Synthetical anthelmintics. Part XVIII...2:4 dialkoxy phenyl butyro lactones." [Irani, Phalnikar & Nargund.] "Part XIX...2:5 dialkoxy phenyl butyro lactones." [Patel & Nargund.] "Part XX...3:4 dialkoxy phenyl butyro lactones." [Chipalkati & Nargund.] 18 (5), 1–11.
b. CHIPALKATI, H. R. & NARGUND, K. S., 1950.—"Synthetical anthelmintics. Part XXI. γγ disubstituted butyro lactones." 18 (5), 12–14.

(344a) As the alkoxy group in the phenyl butyro lactones increases the anthelmintic property and as the alkyl group endows lipoid solubility, dialkoxybenzenes have been prepared and the properties of a number of compounds are tabulated. Their anthelmintic properties will be reported later. R.T.L.

(344b) To increase if possible their anthelmintic properties, an alkyl group was introduced in the gamma position of three butyro lactones. The chemical properties of 12 compounds prepared are described in tabular form. [No anthelmintic tests are reported.] R.T.L.

345—Journal of Urology.

a. REAY, E. R. & ROLLESTON, G. L., 1950.—"Diagnosis of hydatid cyst of the kidney." 64 (1), 26–57.

346—Journal of the Washington Academy of Sciences.

a. FELDMESSER, J. & FASSULIOTIS, G., 1950.—"Reactions of the golden nematode of potatoes, *Heterodera rostochiensis* Wollenweber, to controlled temperatures and to attempted control measures." 40 (11), 355–361.

(346a) One of the reasons why soil fumigation with methyl bromide against *Heterodera rostochiensis* is more effective when applied after a late summer or early autumn harvest than in the spring before planting, is that winter cysts are more resistant than summer formed cysts. Experiments indicate that the absence of hatched larvae from treated cysts when exposed to potato leachings for periods sufficiently long to allow hatching cannot be considered a definite indication of the lethal properties of the fumigant. The average numbers of larvae hatched from summer cysts are significantly higher in tap-water and potato leachings at all temperatures. The stimulatory effect of tap-water seems to be as marked as that of potato leachings at 46°F., 50°F. and 100°F., but at temperatures more commonly associated with the height of potato growing the leachings have a greater effect. Under Long Island, N.Y. conditions soil temperatures do not play any part in the activation or maturing of the larvae. Cysts from soil at or near freezing temperatures will infect potato roots when kept at temperatures approximating those of a normal growing season.

Larvae will hatch out at temperatures as low as 40°F. when the cysts are exposed to leachings or to tap-water for 16 hours. Under field conditions on Long Island larvae in one-year-old cysts do not have to overwinter in order to hatch out. R.T.L.

347—Khirurgiya. Moscow.

*a. FERDMAN, Z. Z., 1950.—[Echinococcosis of the breast.] Year 1950, No. 4, pp. 70–71. [In Russian.]

348—Klinische Monatsblätter für Augenheilkunde und für Augenärztliche Fortbildung.

a. RADNÓT, M., 1950.—"Zystizerkus in beiden Augen mit anatomischem Befund." 116 (2), 206–209.

(348a) Radnót describes a case of Cysticercus infection of both eyes in a 43-year-old Hungarian agricultural worker. The infection was discovered by histological examination after a preliminary diagnosis of metastatic tumours. R.T.L.

349—Leprosy Review. London.

a. BARNES, J., 1950.—"A case of filarial elephantiasis of the face resembling nodular leprosy. 21 (1), 35–36.

350—Liječnički Vjesnik.

*a. TRAUSMILLER, O., 1950.—[Helminthiasis and protozoiasis in children.] 72 (2), 62–64. [In Croatian.]

351—Meddelande. Statens Växtskyddsanstalt. Stockholm.

a. AHLBERG, O., 1950.—"Undersökningar över potatisnematoden *Heterodera rostochiensis* Woll. II. Cystornas storlek och ägginnehåll samt nematodernas beroende av yttre förhållanden och deras inverkan på potatisplantornas knölbildning." No. 55, 56 pp. [English summary pp. 52–55.]

(351a) As a measure of the frequency of *Heterodera rostochiensis* per litre of soil, Ahlberg uses a cyst count obtained by adding the sum of all full cysts to half the sum of those cysts from which larvae have begun to escape, excluding all entirely empty cyst shells. The cyst volume is calculated to estimate the relation between the size of the cysts and the number of eggs. For the correlation between the number of eggs and the volume of the cysts the equation $3{\cdot}3\ y = x - 38{\cdot}5$ has been calculated on the basis of 29 measurements. The volume of the cysts varies from place to place. Seven small "microcysts" found in a cyst were probably vesicles of the Mycorrhiza fungus of the potato plant. During the years 1931 to 1948 the reproduction of the potato nematode in various soils, and with varying soil moisture, was investigated. Sand seems to be the least and leafy mould the most suitable soil. The potato nematode is, however, commoner and more injurious in the sandy districts than in other parts of Sweden, due to the intensive potato growing in those districts. The nematodes are dependent on a fairly high soil moisture; their optimum is probably about 70% relative moisture. The slow increase in sandy soil is doubtless due to its relative dryness. Through the influence on the structure of the soil the moisture seems to have an indirect influence upon the nematodes as well. The acidity of soil probably has no effect. Even a very low frequency of nematodes in the soil greatly reduces the yield. Manuring does not seem to pay if the cyst count is higher than 200 or 300. Nine varieties have been tested for five years but all seem to suffer equally and no variety has a higher tolerance towards the attack of the nematodes than any of the others. About 70 plants, many of them known as host plants for *Heterodera schachtii* were tested but no cysts were found on their roots. A test with wild Swedish species of *Solanum* gave the same negative result. In Sweden, the tomato is apparently the only other host plant. S.B.

352—Meddelelser om Grønland.

a. VIBE, C., 1950.—"The marine mammals and the marine fauna in the Thule district (northwest Greenland) with observations on ice conditions in 1939–41. Trichinosis in arctic mammals." 150 (6), 93–97.

(352a) In a section on "Trichinosis in Arctic Mammals" Vibe states that trichinosis is rare among Polar Eskimos in the Thule district as Polar bears and dogs, which are the commonest source of infection, are usually cooked before the meat is eaten. When dogs are drowned or thrown into the sea, swarms of amphipods devour their carcasses and are in turn eaten by ringed and bearded seals and as portions of dog flesh may be consumed by the seals they may become trichinosed from infected dogs. Walruses in turn may acquire infection from eating ringed seals. Sledge dogs always get a substantial feed with raw meat or entrails. A warning is given against feeding them raw bear meat or fresh dog meat before it has been frozen for at least 36 hours or at −27°C. An unpublished record of the finding by Dr. Roth of Trichinella in a fjord seal from north-east Greenland and in a walrus from west Greenland is mentioned. R.T.L.

353—Médecine Tropicale. Marseilles.

a. DÉJOU, L., JONCHÈRES, H., KOERBER, A., LABAIL, G. & D'ALMEIDA, J., 1950.—"Les localisations génitales de la filariose de Bancroft en A.O.F." 10 (1), 31–60.
b. HUARD, P., GALLIARD, H. & JOYEUX, B., 1950.—"Étude anatomo-clinique d'un cas d'hémato-chylurie." 10 (1), 85–92.
c. BLANC, F. & TOUZIN, R., 1950.—"La splénomégalie égyptienne. (A propos d'une observation de splénomégalie égyptienne à *Schistosoma haematobium*.)" 10 (2), 201–252.
d. PUYUELO, R. & HOLSTEIN, M. M., 1950.—"L'onchocercose humaine en Afrique Noire Française. Maladie sociale." 10 (3), 397–510.

(353a) At the Central African Hospital in Dakar, 36 out of 152 (23%) persons showed microfilariae in the blood. Of these 14 (9%) had *Microfilaria bancrofti* and 22 (14%) *Microfilaria perstans*. The periodicity of *M. bancrofti* was nocturnal in eight cases, and non-periodic in six cases. *M. perstans* was exclusively diurnal in eight cases, exclusively nocturnal in four cases and non-periodic in ten cases. An examination of lymph vessels often revealed the presence of microfilariae when the peripheral blood was negative. The pathological anatomy and aetiology of the various lesions observed in the region of the genitalia are discussed and brief histories of 18 cases are appended. R.T.L.

(353c) The development of our knowledge of the role of schistosomes in the causation of Egyptian splenomegaly is reviewed and the pathological changes found at post mortem, in a case which only revealed *Schistosoma haematobium* infection after death, are described and illustrated in detail. R.T.L.

354—Medical Bulletin. Standard Oil Company (New Jersey).

a. EARLE, K. V., 1950.—"Gastrointestinal parasitic infestation among food-handlers in Ecuador." 10 (2), 208–211.
b. BEAVER, P. C. & DESCHAMPS, G., 1950.—"*Endamoeba histolytica* and other intestinal parasites in eastern Venezuela." 10 (2), 212–217.

(354a) In Ecuador the incidence of helminth infections in 61 male food-handlers as shown by faecal examination, was *Trichuris trichiura* 57·3%, hookworm 40·9%, *Ascaris lumbricoides* 28·3%, *Strongyloides stercoralis* 26·2%. In 48 female food-handlers the incidence was *T. trichiura* 62·5%, hookworm 33·3%, *A. lumbricoides* 31·3%, *S. stercoralis* 14·6%, *Hymenolepis nana* 2·1%, *Taenia solium* 2·1%. These results are compared with those obtained by Earle and others for similar groups in Peru and Argentina. R.T.L.

(354b) Adjacent to the old village of Caripito, which is located in a tropical semi-deciduous forest area in eastern Venezuela, an oil company has built a modern town for its employees. They enjoy good housing, sanitary inspection of the market, and modern

water and sewage systems. Faecal examination of 272 individuals by direct smear and zinc sulphate concentration techniques revealed the following helminth infections: Trichuris 73%, Ascaris 43%, *Necator americanus* 31% and *Strongyloides stercoralis* 15%; 8% were negative for all parasites. Hookworm and Strongyloides were found mostly in adults. Ascaris and Trichuris were common in adults and children but heavy infections were found mostly in children. Direct dooryard pollution by children is regarded as of prime importance in the spread of intestinal parasites in this otherwise well-sanitated community. R.T.L.

355—Medical Journal of Australia.

a. BEARUP, A. J. & LAWRENCE, J. J., 1950.—"A parasitological survey of five New Guinea villages." 37th Year, 1 (22), 724–732.
b. SUSMAN, M. P., 1950.—"Hydatid cyst of the diaphragm." 37th Year, 2 (9), 335–336.

(355a) During a nutrition survey of the five small villages Busama, Kaiapit, Patep, Kavataria and Koravagi in New Guinea practically all the natives, except infants, were found to harbour hookworms. *Trichuris trichiura* was strikingly higher in the three coastal villages Busama, Kavataria and Koravagi (viz., 78%, 88% and 82%) as compared with Kaiapit (4·5%) and Patep (10%). The incidence of Ascaris was lower than that of Trichuris. *Strongyloides stercoralis* occurred in two people in Koravagi. Filariasis was of the nocturnal periodicity type. Elephantiasis occurred but was not common. R.T.L.

356—Medicamenta. Madrid.

*a. SORIANO Y FRADE, A., 1950.—"Peritonitis a consecuencia de perforación de un asa intestinal sana por *Ascaris lumbricoides*." 8 (181), 310.

357—Medicina y Cirugía de Guerra. Madrid.

*a. QUADROS, M. DE, 1950.—"Hidatidosis abdominal." 12 (4), 209–211.

358—Medicina Colonial. Madrid.

a. PRIETO LORENZO, A., 1950.—"Estudio parasitológico de la uncinariasis y su distribución geográfica." 16 (3), 190–218.
b. MATILLA, V., APARICIO GARRIDO, J., DÍEZ MELCHOR, F. & PRIETO LORENZO, A., 1950.—"Estudios sobre anquilostomiasis. I. La respuesta inmunitaria frente al parasitismo. Una reacción de fijación del complemento." 16 (4), 273–280. [English, French & German summaries pp. 279–280.]

(358b) Antigen from complete worms gave only five positive reactions in complement fixation tests on 16 hookworm cases. R.T.L.

359—Medicina. Revista Mexicana.

a. RUIZ REYES, F., 1950.—"Observaciones con la dietilcarbamazina (hetrazán) en la zona oncocercosa de Oaxaca." 30 (605), 225–230.

(359a) In Oaxaca, Mexico, 1,483 persons from 16 villages were treated with hetrazan for onchocerciasis. Clinical reactions were shown by 69·8%, the chief being pruritus (80·7%), oedema (55·5%), fever (15·3%), conjunctivitis (3·2%) and headache (3·1%). Skin biopsy was carried out before treatment and palpable nodules were removed. The presence of embryos at biopsy after treatment was attributed to an overlooked nodule. 1,026 cases (69·1%) showed no embryos after 7–14 days and 457 (30·8%) showed a marked reduction in their numbers in six days or over. Details of 50 cases are tabulated. In 34 (68%) the biopsy after treatment was negative and in 16 (32%) the embryos were reduced in number. R.T.L.

360—Medisch Maandblad. Batavia.

a. LIE KIAN JOE & BRAS, G., 1950.—"Enkele bijzondere worminfecties uit Indonesië. a. *Plagiorchis javensis*. b. *Ancylostoma caninum*. c. Het syndroom van Meyers en Kouwenaar: hypereosinophilie en microfilarien in de lymphe klier." 3 (5), 165–173. [English summaries pp. 167, 168 & 172.]

b. GAN, K. H., 1950.—"De betekenis van de kikkerlarven bij de sparganose." 3 (9), 307–312. [English summary pp. 311–312.]

(360a) Lie Kian Joe & Bras review the literature dealing with *Plagiorchis* infections in man and record the recovery, at autopsy, of single specimens of *P. javensis* from two individuals in Indonesia. These two worms are described. An immature female of *Ancylostoma caninum* was recovered from the small intestine of an Indonesian woman, aged about 30 years, who also harboured numerous specimens of *A. duodenale*, *Necator americanus*, *Trichostrongylus colubriformis* and *Strongyloides stercoralis*. Numerous specimens of *Trichuris trichiura* were present in the large bowel. The name "Meyers & Kouwenaar's syndrome" is provisionally proposed for a clinical manifestation characterized by hypereosinophilia and generalized lymphadenopathy. In four of the six cases parasites, presumably microfilariae, were observed in sections of lymph glands at biopsies. No microfilariae were encountered in the peripheral blood. In a fifth case the swelling of the lymph glands and the hypereosinophilia disappeared gradually within 18 months. None of the common manifestations of filariasis were observed. In another case of hypereosinophilia, tentatively diagnosed as one of tropical eosinophilia by the clinician, the histological picture of the excised lymph gland differed from that observed in the other cases in that no eosinophilic abscesses were encountered. P.L.leR.

(360b) Natural infections with *Diphyllobothrium ranarum* spargana are fairly common in frogs and toads around Djakarta. As frog tadpoles from the rice fields are not infected, it appears probable that adult frogs from these fields acquire their spargana by feeding on infected cyclops. R.T.L.

361—Medizinische Klinik.

a. WARNECKE, W., 1950.—"Zur Behandlung der Enterobiasis vermicularis mit Gentianaviolett." **45** (23), 737–739.

(361a) Warnecke has treated two series of cases of human enterobiasis with gentian violet preparations. The first, consisting of five children and one adult, was given preparation "G" and, with the exception of one child, all showed living worms in the stool and anal swabs were positive for ova within 37 days of treatment. The second series (five adults and three children) received preparation "B" [no details of either preparation are given] and all except one adult showed living worms and ova by the 42nd day after treatment. Warnecke concludes that gentian violet is neither a vermicide nor a vermifuge and cannot be considered a satisfactory remedy for enterobiasis. A.E.F.

362—Medycyna Weterynaryjna.

a. NAGÓRSKI, F., 1950.—"Szybkość opadania czerwonych ciałek krwi w robaczycy jelitowej u koni." 6 (2), 98–99. [In Polish.]

b. STAŚKIEWICZ, G., 1950.—"Mandaverm—nowy środek przeciwrobaczy." 6 (3), 164. [In Polish.]

c. SKRYABIN, K. I. & SHIKHOBALOVA, N. P., 1950.—"Helmintologia radziecka w świetle miczurinowskiej nauki." 6 (5), 272–274. [In Polish.]

d. STEFAŃSKI, W., 1950.—"Osiągnięcia radzieckiej parazytologii." 6 (6), 333–335. [In Polish.]

e. STEFAŃSKI, W. & ŻARNOWSKI, E., 1950.—"Nowy środek leczniczy przeciwko glistnicy świń." 6 (7), 410–413. [In Polish: English & Russian summaries p. 412.]

f. TRAWIŃSKI, A., 1950.—"Odzwierzęce choroby pasożytnicze." 6 (8), 456–458. [In Polish.]

g. KUPROWSKI, M., 1950.—"Entero-hepatitis infectiosa u indyków na terenie woj. wrocławskiego (Doniesienie tymczasowe)." 6 (8), 461–463. [In Polish.]

h. HAY, J., 1950.—"Motylica u cieląt oseskow." 6 (9), 534. [In Polish.]

i. SZAFLARSKI, J., 1950.—"Zastosowanie próby allergicznej śródskórno-powiekowej w diagnostyce chorób pasożytniczych u zwierząt." 6 (10), 585–589. [In Polish : English & Russian summaries p. 588.]

(362a) Nagórski tested the sedimentation rate of red blood corpuscles from horses infected with strongyles. The infections were grouped as very light, medium, heavy, and very heavy. There exists a certain relationship between the degree of infection and the velocity of sedimentation, but there was no constant regularity. After treatment sedimentation was slower. This could be taken as a diagnostic in mass treatment against strongyles in horses. Animals with severe anaemia produced a distinctly accelerated sedimentation. C.R.

(362b) "Mandaverm" is a vermifuge which can be used against ascarids in horses, dogs, cats and silver foxes. Its main characteristics are low toxicity and high efficiency. C.R.

(362c) [This paper is reprinted in Polish from *Veterinariya*, 1949, 26 (5), 22–24.]

(362d) In this lecture Stefański deals with the development of parasitological schools in the U.S.S.R. C.R.

(362e) The authors report results obtained in the treatment of *Ascaris lumbricoides* in 51 young pigs. 0·25 gm. of sodium fluoride per kg. body-weight mixed as a 1% addition to wet food was very effective. The worms began to be expelled on the 3rd day after treatment and this process lasted up to 7–8 days. In very heavy infections a second treatment was necessary two weeks later, after which the animals were free of worms. There were no side effects. C.R.

(362f) This is an essay on the parasitic diseases which can be contracted by man from animals. Among the helminths mentioned are *Taenia solium, T. saginata, Echinococcus granulosus, Fasciola hepatica, Opisthorchis felineus, Trichinella spiralis* and *Toxocara canis*. C.R.

(362g) Kuprowski in his report on enterohepatitis in turkeys imported from Great Britain records the finding of *Heterakis gallinae* in the intestine. C.R.

(362h) Hay reports the occurrence of *Fasciola hepatica* in 18 calves of 2–3 weeks of age. The flukes varied in number from one to five and while some were young others had fully matured genital organs and the uterus was packed with eggs. C.R.

(362i) Szaflarski reports results obtained in employing allergic tests for the diagnosis of liver-fluke in cattle and in sheep, and lungworm (*Dictyocaulus filaria*) in sheep. He found that after injection of antigen, prepared from *Fasciola hepatica*, intradermally into the palpebra there appears a swelling which gradually increases and reaches a maximum in four hours and then disappears in seven to eight hours. According to the author this test is specific and better than parasitological examinations. Altogether 224 sheep and 50 cattle were examined. Additional infestations with other parasites do not influence the results. In his opinion a veterinary surgeon should be able in an eight-hour working day to examine 200 animals and considers that this test should be widely employed in the diagnosis and control of parasitic diseases. C.R.

363—Mémoires de l'Académie de Chirurgie. Paris.

a. BRÉHANT, J., 1950.—"Traitement chirurgical des kystes hydatiques pulmonaires." 76 (1/3) 52–55. [Discussion p. 55.]

364—Memoranda Societatis pro Fauna et Flora]Fennica.

a. SJÖBERG, A., 1950.—"Die bei den Haustieren in Finnland vorkommenden Nematoden." Year 1948–49, **25**, 15–16.

(364a) Sjöberg lists the nematode parasites which he has collected from horses, cattle and sheep in the south eastern Bothnia province of Finland. He adds that he has occasionally found numerous specimens of well developed *Strongylus vulgaris*, *S. equinus* and *S. edentatus* when cutting through the abdominal muscles, and large well developed *Parascaris equorum* on incising the tunica vaginalis when castrating stallions. R.T.L.

365—Mikrokosmos.

a. PAX, F., 1950.—"Tierleben in Schwefelquellen." **39** (11), 245–247.

(365a) Pax gives a brief note on animal life in sulphur springs and includes the following records of free-living nematodes: *Terschellingia paxi* from Split in Dalmatia; *Acrobeles ilidzensis* from Bad Ilidza, near Sarajevo; *Diploscapter coronatus* and *Panagrolaimus rigidus* from Schallerbach, Austria. It is also stated that nematodes are frequently found in sulphur springs in Germany. A.E.F.

366—Minerva Chirurgica. Turin.

a. CORTESE, L., 1950.—"Sulle cisti da echinococco della milza." **5** (11), 317–325.

367—Minerva Medicolegale.

*a. BOSSI, E., 1950.—"Echinococcosi del cuore e morte improvvisa." **70** (1), 24–25.

368—Nachrichtenblatt des Deutschen Pflanzenschutzdienstes.

a. GOFFART, H., 1950.—"Über die nematozide Wirkung neuer Bodendesinfektionsmittel." **2** (7), 105–107.

(368a) Goffart briefly summarizes present knowledge on the nematicidal efficacy of D-D mixture, ethylene dibromide, and methyl bromide in solution, as revealed in the American and British literature and in his own experience with D-D. He comments on the variable and often transient results which have been obtained. B.G.P.

369—Naturwissenschaften. Berlin.

a. TREIBS, A., MENDHEIM, H. & LORENZ, M., 1950.—"Über einen neuen Blutfarbstoff. Ascaricruorin." **37** (16), 378–379.

(369a) Treibs *et al.* have examined the respiratory pigment from the body fluid of *Ascaris lumbricoides* for which they propose the name "ascaricruorin". The positions of the absorption bands and affinity of the pigment for oxygen and carbon monoxide were examined. [The claim that this is a "new" blood pigment overlooks previous work in this field which was evidently unknown to the authors.] W.P.R.

370—Nordisk Medicin.

a. JACOBSEN, A. K. F., 1950.—"Ascarider forårsagende aflukning af galdevejene, mekanisk ileus og diffus peritonitis hos et 3 års barn." 43 (23), 957–958. [English summary p. 958.]
b. AXTRUP, S., 1950.—"Om filariasis." **43** (23), 958–959.

(370a) Laparotomy performed on a girl 3 years of age revealed generalized peritonitis due to perforation of the bowel wall by Ascaris worms; 172 worms were extracted from the jejunum, which was completely obstructed. At autopsy the common bile duct was found to be occluded. The liver was perforated throughout by Ascaris and abscesses, and there was considerable destruction of the liver tissue. Forty-nine worms were removed from the liver and 94 from the alimentary canal. R.T.L.

(370b) Axtrup describes an infection of filariasis in two boys, sons of a Swedish missionary in the Congo. Probably the boys were infected with both *Wuchereria bancrofti* and *Loa loa*. S.B.

371—North American Veterinarian.

a. OLSEN, O. W. & WADE, L. L., 1950.—"Nematocidal efficacy of hexachloroethane-bentonite suspension in sheep and goats." 31 (11), 740–742.

(371a) In sheep *Haemonchus contortus* are destroyed by doses of 60 c.c. or 0·3 gm. per lb. body-weight of hexachlorethane-bentonite suspension. Doses of 30 c.c. were unsatisfactory. The drug did not affect *Ostertagia trifurcata, Trichostrongylus colubriformis, Cooperia curticei, Nematodirus filicollis, Oesophagostomum columbianum, Trichuris ovis* or *Capillaria* sp. In one goat, all *H. contortus*, 67% of *T. axei* and 64% of *O. ostertagi* were destroyed by doses of 30 c.c. given on two consecutive days whereas in two other goats 97% and 50% of the *H. contortus* were killed by single doses of 30 c.c. In all three goats, *T. colubriformis, O. columbianum* and *Trichuris* sp. were unaffected. R.T.L.

372—Nuovi Annali d'Igiene e Microbiologia. Rome.

a. MARTELLI, T. & ZAFFINO, C., 1950.—"Sulla frequenza dell'infestazione da *Oxyurus vermicularis* nelle collettività infantili." 1 (2), 9–11. [English summary p. 11]

(372a) With NIH cellophane swabs used on three successive days on 515 inmates of four children's colonies in Rome, 370 (71·84%) were found to have Enterobius infection. Eosinophilia was present in a considerable percentage of cases. R.T.L.

373—Pflanzenarzt. Vienna.

a. BÖHM, H., 1950.—"Mancherlei über Älchenkrankheiten." 3 (6), 4–5.

(373a) Böhm deals in a general way with leaf-eelworms, stem-eelworms and root-eelworms, describing briefly their effects on horticultural and agricultural crops and recommending for their control clean cultivation and crop rotation. M.T.F.

374—Pharmaceutisch Weekblad. Amsterdam.

a. KOK, J. F., 1950.—"Wormmiddelen." 85 (19/20), 341–354.

(374a) Kok deals briefly with the incidence, spread, habitats, symptoms and classification of the common helminths of man. The species *Taenia saginata, T. solium, Ascaris lumbricoides, Enterobius vermicularis* and *Trichuris trichiura* are practically the only species indigenous in the Netherlands. The morphology and life-cycles of these species and of a few others are briefly referred to. *Schistosoma* spp. are stated to have molluscs and crustaceans as intermediate hosts. *Onchocerca* spp. and *Loa* are transmitted by the bites of midges. More than 140 species of helminths parasitize man and 800 million persons are infected with helminths. He deals with the action and choice of anthelmintics for the various species and mentions the chemical composition and active components of the commonly used anthelmintics. P.L.leR.

375—Philippine Journal of Agriculture.

a. AGATI, J. A. & CLARA, F. M., 1950.—"Preliminary tests to determine the efficacy of D-D as a soil fumigant against root-knot nematode." Year 1949, 14 (3), 233–241.

(375a) Agati & Clara used D-D mixture in a spot injector at 3 c.c. per point, 15 inches apart each way, on one of two plots artificially inoculated with *Heterodera marioni*. There was a significant difference in the number of tomato plants with and without galls on the two plots: less than 4% were galled on the treated plot and 71% on the untreated. B.G.P.

376—Phytopathology.

a. ALLEN, M. W. & RASKI, D. J., 1950.—" The effect of soil type on the dispersion of soil fumigants." 40 (11), 1043–1053.
b. TARJAN, A. C., 1950.—" Investigations of meadow nematodes attacking boxwood, and the therapeutic value of sodium selenate as a control." 40 (12), 1111–1124.

(376a) Allen & Raski here give a more detailed account of the work already reported on [for abstract see Helm. Abs., 19, No. 172a]. An inoculum of 2nd stage larvae of *Heterodera marioni* was got by burying infested roots in sandy loam for 10 days and then discarding them ; for *H. schachtii*, cyst-infested soil was used. Inocula of 100 ml. were buried in cheesecloth bags for seven days at various horizontal and vertical distances from the injection point in 32-gallon metal cans of six types of soil. Kill was determined by counting up to 100 larvae in the roots of tomato or beet seedlings grown in the inocula plus clean soil ; counts of 100+ were scored as "no effect". [Results were as previously abstracted.] B.G.P.

(376b) Tarjan records the symptoms caused by the attacks of *Pratylenchus* sp., closely allied to *P. pratensis*, on the roots of box, *Buxus sempervirens*. Twelve gravid females laid between them 17 eggs of which only 11 hatched in an average of 5·7 days. About 96% of nematodes emerged from roots after three weeks in Baermann funnels. Some "inconclusive experiments" show that solutions of sodium selenate at up to 100 p.p.m. "caused striking fluctuations of nematode populations in roots of 12-year-old boxwoods as contrasted with controls". Two other experiments with powdered sodium selenate gave results which did not agree with each other. Hot-water treatment of roots with and without 200 p.p.m. sodium selenate were only successful at temperatures lethal to some plants. J.B.G.

377—Plant Disease Reporter.

a. YOUNG, R. A., TORGESON, D. C. & ANDERSON, C. G., 1950.—" Meadow nematodes (*Pratylenchus* sp.) on Mazzard cherry and forage plants and weeds in nursery rotations." 34 (8), 230–231.
b. GODFREY, G. H., 1950.—" The citrus nematode in Texas." 34 (9), 269–270.
c. SZKOLNIK, M., 1950.—" Nematode root knot of cinchona in the Western Hemisphere." 34 (10), 305.

(377a) *Pratylenchus* sp. in the roots caused severe retardation of growth of Mazzard cherry (*Prunus avium*) seedlings and lining-out stock. Examination of the cover crops used in nursery rotations showed that the seedlings of creeping red fescue, alta fescue, perennial rye grass, common rye grass, crimson clover and hairy vetch became infected when planted in infested soil. If further investigation should prove that *Pratylenchus* is the primary cause of the retardation of growth, control will be complicated by the wide host range and wide shipment of nursery stock. R.T.L.

(377b) The citrus root nematode, *Tylenchulus semipenetrans*, is reported for the first time from Texas. It occurred in a grapefruit tree near Mission. Further study showed adult males and females and immature larvae on roots of similar trees both in the same orchard and within a few miles. Most of the trees were showing signs of die-back, but some were apparently healthy. It is shown that it is not the cause of "slow decline", a locally known disease of citrus trees. It is suggested that the nematode may have been introduced by trees brought in from Florida and California and that it has only recently reached sufficient abundance to show harmful effects. It may be more widely distributed than is realized. P.M.B.

(377c) Nematode infections in roots of cinchona trees have not hitherto been found in the Western Hemisphere. Szkolnik now reports that Tarjan has identified *Meloidogyne incognita* in roots of *Cinchona micrantha* grown in an experimental planting at Finca

Moca in Guatemala. A similar and perhaps identical nematode was also discovered in two-year-old stock of *C. succirbura* at Finca El Naranjo. In a few instances the infection was severe. R.T.L.

378—Plant Disease Reporter. Supplement.

a. STEINER, G., 1950.—"Plant pathological investigation in the United States II. Plant nematology research in the Bureau of Plant Industry, Soils and Agricultural Engineering." No. 195, pp. 463–470.

b. McCUBBIN, W. A., 1950.—"Plant pathological investigation in the United States II. State quarantines on interstate movement." No. 195, pp. 483–500.

(378a) Steiner points out that the study of nematology in relation to crop production has suffered from the diversity of basic taxonomic, morphological, physiological, bionomic, geographical and economic problems which should necessarily be studied to implement the efforts being made to control noxious types of nematodes. Their life medium is the soil which is a difficult and complex environment. The annual loss to crop production in the U.S.A., estimated at four to five hundred million dollars, is primarily one of crop reduction but additional losses arise because growers are forced to resort to rotation of other crops to reduce these pests. Steiner then deals with these nematodes as carriers, distributors and vectors of other plant diseases; as secondary invaders; as a controlling factor of pathogenic nematodes; as members of the life association in the soil; their relation to the physical and chemical properties of the soil and their elimination by soil treatment. The enemies and diseases of nematodes are briefly summarized. It is estimated that the annual value of soil fumigants manufactured for nematode control amounts to at least five million dollars. R.T.L.

(378b) In this review of State quarantine on interstate movement of plants in the U.S.A., McCubbin mentions that the three States Washington, Oregon and North Carolina have set up a protective scheme of inspection, treatment and certification of their own narcissus bulb production and require a similar procedure for bulbs entering these States from elsewhere. The standard hot-water treatment is prescribed for infested bulbs and Washington and Oregon also provide for the use of formaldehyde in connection with this treatment. Alabama, California, Colorado, Florida, Georgia and Wisconsin have promulgated prohibitions on the entry of plant pathogen cultures including living stages of nematodes except under special permit, as a precaution against the introduction of *Heterodera rostochiensis*. Three New England States, Maine, New Hampshire and Vermont, have taken quarantine measures to prevent the irregular or unauthorized shipment of potatoes from Long Island into or through their territory. Virginia requires that a State certificate, establishing freedom from visible root-knot and other destructive insects and plant diseases, shall accompany the movement of all tomato plants in a six county area or from other States. R.T.L.

379—Polski Tygodnik Lekarski. Warsaw.

a. MYĆKA, A., 1950.—"O niedokrwistości wywołanej przez pasożyty jelitowe." [Anaemia caused by intestinal parasites.] 5 (3), 97–101. [English summary p. 18*.]

380—Pomme de Terre Française.

a. REYNARD, 1950.—"Le nématode doré de la pomme de terre." Année 13, No. 130, pp. 10–15.

(380a) Reynard gives a brief general account of *Heterodera rostochiensis*, which has appeared in France in recent years. He covers morphology, biology, symptoms, hosts, spread, and control. He stresses that crop rotation is the only effective method at present and recommends that potatoes should not be grown more frequently than one year in three, pending the results of a topographical survey which is about to be made. B.G.P.

381—Poultry Science.

a. RIEDEL, B. B., 1950.—" The effect of cecal coccidiosis upon the susceptibility of chickens to *Ascaridia galli*." **29** (4), 530–532.

(381a) Riedel has found by experiment that the presence of *Eimeria tenella* does not alter the susceptibility of chickens to infection with *Ascaridia galli*. P.A.C.

382—Practitioner.

a. BODDIE, G. F., 1950.—" Diseases of domesticated animals constituting a hazard to mankind." **165** (985), 67–74.

383—Praxis. Berne.

a. ROSSEL, P., 1950.—" L'oxyurose en tant que facteur étiologique de troubles nerveux chez les enfants." **39** (21), 449–451.

384—Prensa Médica Argentina.

a. ARANA IÑIGUEZ, R., MALOSETTI, H., TÁLICE, R. & SAN JULIÁN, J., 1950.—" Cisticercosis racemosa de la fosa posterior. Consideraciones clínicas y quirúrgicas." **37** (23), 1231–1239. [English summary p. 1238.]
b. COTTONARO, C. A., 1950.—" Quistes hidatídicos múltiples de hígado." **37** (23), 1257–1258.
c. LISTA, G. A., 1950.—" Progresos terapéuticos en medicina interna durante año 1949. Parasitologia." **37** (40), 2401–2403.

385—Previdenza Sociale.

*a. FERRARO, F., 1950.—" Il problema dell'anchilostomiasi come malattia professionale dei lavoratori agricoli." **6** (1/2), 222–227.

386—Proceedings of the Society for Experimental Biology and Medicine.

a. LIU, C. & BANG, F. B., 1950.—" Agglutination of cercariae of *Schistosoma mansoni* by immune sera." **74** (1), 68–72.

(386a) An agglutinin for the cercariae of *Schistosoma mansoni* developed in the blood of rhesus monkeys which had been infected by intraperitoneal injection of 900 and 600 cercariae. In their sera clumping of the cercariae may occur within two to three minutes but usually in 20 to 30 minutes. The agglutinin appeared with the appearance of eggs in the faeces. The reaction occurred in heat inactivated as well as in fresh serum. It also appeared with the sera of monkeys recently infected with trichina. There was no reaction in four out of seven monkeys (*Macacus philippinensis*) with chronic *S. japonicum* infections, or in six normal monkeys. R.T.L.

387—Proceedings. United States Livestock Sanitary Association.

*a. U.S. LIVESTOCK SANITARY ASSOCIATION, 1950.—" Report of Committee on Parasitic Diseases." 53rd Annual Meeting (1949), pp. 128–134.

388—Public Health Reports. Washington.

a. BERRY, E. G., NOLAN, M. O. & OLIVER GONZÁLEZ, J., 1950.—" Field tests of molluscacides against *Australorbis glabratus* in endemic areas of schistosomiasis in Puerto Rico." **65** (30), 939–950.

(388a) In laboratory tests for molluscicides 11 chemicals out of more than 750 were effective in killing *Australorbis glabratus*, a vector of *Schistosoma mansoni*, in dilutions of 10 parts or less per million. Under field conditions in Puerto Rico six proved very efficient. In a stream near Los Pena sodium pentachlorophenate at 9·5 p.p.m., based on a six hour flow-rate dosage, destroyed all the molluscs and their embryonated eggs for a distance of one and a half miles downstream although three untreated tributaries entered

within this distance. In the authors' opinion a watershed would not require further treatment for at least six or perhaps even twelve months. Crayfish were not affected. Catfish, guppies and eels were poisoned but guppies had returned 24 hours later. In preliminary experiments a rhesus monkey and a calf received water containing 20 p.p.m. without distress but further tests are needed before this compound could be applied without risk to man or cattle using the water below the point of application. Copper pentachlorophenate also showed considerable promise at 10 p.p.m. Its cost is low but it is insoluble in water unless mixed with a water soluble gum or wax. The remaining four chemicals, which are costly but effective at 10 p.p.m., are: pentabromophenol, 2,4,6-tribromophenol, 2,4,6-triiodophenol and its sodium salt. Of the triiodophenol compounds the former has little effect on fish but the latter is toxic. R.T.L.

389—Puerto Rico Journal of Public Health and Tropical Medicine.

a. MALDONADO, J. F., ACOSTA-MATIENZO, J. & VÉLEZ-HERRERA, F., 1950.—"Biological studies on the miracidium of *Schistosoma mansoni*. Part 4. The role of pH in hatching and longevity." **26** (1), 85–91. [Also in Spanish pp. 92–99.]

(389a) The hatchability of *Schistosoma mansoni* eggs is not adversely affected by *p*H 5·16 to 8·35, but the hatched miracidia are highly sensitive. Even slight acidity causes death within a few hours. R.T.L.

390—Report. Department of Agriculture, New Zealand.

a. FILMER, J. F., 1950.—"Animal Research Division. Parasitology." Year 1949–50, pp. 66–67.
b. McILWAINE, J. E., 1950.—"Live-stock Division. Health of live-stock." Year 1949–50, pp. 93–100.
c. GREIG, A. M. W., 1950.—"Horticulture Division. Vegetable diseases." Year 1949–50, pp. 122–123.

(390a) Although *Coenurus cerebralis* has been reported in recent years from isolated farms in north and south Canterbury, its occurrence on two neighbouring properties in mid-Canterbury is now reported for the first time. R.T.L.

(390b) Parasitic bronchitis and gastritis in calves were common in New Zealand during the past year. Liver-fluke was noted in a number of sheep killed at the Timaru works, but these had been purchased from fluke-infested districts in the South Island. R.T.L.

(390c) The Horticulture Division reports that eelworms caused serious damage to some carrot crops in the Pukekohe District. R.T.L.

391—Report of the Department of Agriculture, Northern Rhodesia.

a. EYRE, J. C., 1950.—"Msekera Tobacco Station, Fort Jameson. Trials of soil fumigant." Year 1949, p. 17.

(391a) A soil fumigant [unnamed] was applied to two blocks on tobacco seed beds at the rate of 3·5 c.c. per sq. ft. after the beds had been made up. Water was applied three times daily for three days. In one block the number of eelworm infested plants was 26, in the other it was 5. Of two untreated blocks one had 32, the other had 24 infested plants. A field trial was disappointing as the yield of tobacco in both the treated and control plots was too poor. R.T.L.

392—Report of the Department of Agriculture & Stock, Queensland.

a. LEGG, J., 1950.—"Report of the Animal Health Stations." Year 1949–50, pp. 52–56.

(392a) Calves have often become infected with *Strongyloides* and *Cooperia* when four weeks old. *Haemonchus, Ostertagia* and *Trichostrongylus* appear a little later while *Bunostomum* and *Bosicola* are not present until the age of three to four months is reached. The worm burden is gradually built up until the fifth or sixth month and then decreases

rapidly and remains low. This is attributed to the development of immunity from the moderate intake of larvae. The immunity is specific. In *Haemonchus* it is temporary, for weaners 12–18 months old can again acquire a pathogenic burden, whereas in *Bunostomum* a moderate infection appears to produce a permanent immunity. Continuous exposure to large numbers of infective larvae delays the development of immunity. Chronic parasitism results and after the removal of the adult worms by anthelmintics reinfection occurs. Time of calving is apparently important, for the calves weaned and turned out to graze in late summer and autumn are apt to pick up the heaviest infections. In Queensland in 1949–50 there were numerous outbreaks due to abnormally heavy rains in October and the early months of the following year. Phenothiazine proved effective in cattle only for *Haemonchus* and *Bosicola*, while *Cooperia* seemed very resistant. There were several fatal cases in calves with persistent diarrhoea. Although regularly drenched with phenothiazine, they showed infections of 40,000 to 98,000 adult *Cooperia punctata* and *C. pectinata* at post mortem. As the worm burden was low in others with a similar condition some other factors may have been present. *Stephanurus dentatus* caused extensive liver damage in two calves in Ipswich. In fowls examined at Yeerongpilly ascaridiasis occurred in 23 batches in 1948–49 and in 29 in 1949–50, and "gizzard worm" and tapeworm in 8 batches in 1948–49 and in 5 batches in 1949–50. R.T.L.

393—Report of the Minister for Agriculture. Dublin.

a. ANON., 1950.—"Veterinary College of Ireland. Parasitology Section." 19th (1949–50), pp. 49–50.
b. ANON., 1950.—"Veterinary Research Laboratory. Parasitology Section." 19th (1949–50), pp. 88–89.
c. ANON., 1950.—"Report of the Agricultural Department, University College, Dublin, for the year 1949–50. (7) Agricultural zoology: (ii) Eelworms." 19th (1949–50), pp. [16]–[17].

(393a, b, c) Four new cases of *Paramphistomum cervi* and three of *Cysticercus bovis* were identified in Irish cattle in 1950. Faeces samples from cattle received from veterinary surgeons in general practice indicated that helminth diseases were less prevalent than in some former years. Of 2,411 samples, 29% contained *Fasciola hepatica* eggs and 22% had trichostrongylid ova. In 7% both kinds of eggs were present. Among the factors accounting for these more favourable results were the more general use of anthelmintics, a higher standard of nutrition, and climatic conditions. At the Albert Agricultural College, Glasnevin, about 100 soil samples were tested weekly for *Heterodera rostochiensis* cysts on behalf of the Department of Agriculture to ensure that potatoes being grown for certification as seed should only be planted in eelworm-free soil. R.T.L.

394—Réveil de l'Agriculture.

*a. ROLLAND, L., 1950.—"Débarrassons-nous des anguillules." 59, 54–55.

395—Revista del Instituto Bacteriológico Malbrán. Buenos Aires.

a. DIOS, R. L., SOMMERVILLE, E. T. W. DE & SEIN, A., 1950.—"Indice de parasitismo intestinal en niños de las salas III, XI y XII del Hospital de Niños de Buenos Aires." Years 1945–48, 13 (1), 5–7.

(395a) Of 237 patients in the Children's Hospital, Buenos Aires, thirteen had *Trichuris*, four had *Ascaris* and two *Hymenolepis nana*. In only two instances was there a double infection, viz. of *Ascaris* and *Trichuris*. R.T.L.

396—Revista del Instituto de Salubridad y Enfermedades Tropicales. Mexico.

a. COLORADO IRIS, R., TREVIÑO, A., DOMÍNGUEZ, R. & MAZZOTTI, L., 1950.—"La semilla de calabaza en el tratamiento de las teniasis." 11 (1), 57–59. [English summary p. 59.]

(396a) Aqueous extract of pumpkin seeds completely removed tapeworm from 60 out of 85 patients. In 39 cases the whole parasite was expelled. R.T.L.

397—Revista Kuba de Medicina Tropical y Parasitología.

a. SOTOLONGO, F., 1950.—" Tratamiento de la strongyloidiasis con el hetrazán. Communicacion previa." 6 (5/6), 72–73.
b. SOTOLONGO, F., 1950.—" Teniasis y hetrazán." 6 (5/6), 73.
c. SÁNCHEZ CASTELLANOS, M., 1950.—" Apendicitis parasitarias." 6 (5/6), 82–84.
d. BASNUEVO, J. G. & SEUC-CHIU, A., 1950.—" Fasciolopsis buski en Cuba. (Dos casos tratados con cloroquina, violeta de genciana, hexilresorcinol y tetracloroetileno)." 6 (7/8), 91–96. [English summary p. 95.]
e. BASNUEVO, J. G., 1950.—" STB (un nuevo arsenical trivalente)." 6 (9/10), 119–120. [English summary p. 120.]
f. NEGHME, A., BERTÍN, V., TAGLE, I., SILVA, R. & ARTIGAS, J., 1950.—" *Diphyllobothrium latum* en Chile. II.—Primera encuesta en el Lago Colico." 6 (9/10), 134. [English summary p. 134.]

(397a) Sotolongo has treated with hetrazan three patients suffering from infection with *Strongyloides stercoralis*. In two cases the dosage was 1 gm.; in the third it was 1·2 gm. Larvae disappeared from the faeces after treatment. One patient complained of some diarrhoea but the others suffered no ill effects. P.A.C.

(397b) Sotolongo has used hetrazan as a vermifuge for human tapeworms with mixed results. First treatment was ineffective in all cases, but a second treatment in a single patient was more successful. P.A.C.

(397c) Castellanos believes that many cases of appendicitis in Cuba have been due to the presence of *Trichuris*. He made a special examination of 80 cases, 47·5% of which showed ova in the faeces before operation. Examination of the appendix revealed that 61·25% were affected with the nematode. P.A.C.

(397d) Two young Chinese who had recently arrived in Cuba from Canton were successfully treated for *Fasciolopsis buski*. In one case a mixture of hexylresorcinol and tetrachlorethylene was administered by Lyon tube. In the other, 0·09 gm. gentian violet and 0·5 gm. chloroquine were given daily during 30 days. R.T.L.

(397e) Preliminary trials of STB, a new and relatively non-toxic trivalent arsenical, are reported in the treatment of *Trichuris trichiura*, *Necator americanus* and *Ascaris lumbricoides* with results somewhat similar to those of sodium-stovarsol and Kutan (carbarsone with sodium carbonate). No complete cures have so far resulted though the numbers of eggs in the faeces were greatly reduced in the case of *N. americanus* and *A. lumbricoides*. In rectal infections with *Trichuris* hexylresorcinol enemas in a concentration of not less than 1 in 200 were most effective. P.M.B.

(397f) [This paper is reprinted from *Bol. Inform. Parasit. Chil.*, 1950, 5 (2), 16–17. For abstract see Helm. Abs., **19**, No. 58a.]

398—Revista Médica de Chile.

a. CARDENAS MONTERO, A., 1950.—" Acción de tipo histaminico del liquido perienterico del *Ascaris lumbricoides* var. *suum*." 78 (4), 272–274.
b. FAIGUENBAUM, J., AGOSIN, M. & TAMARGO, A., 1950.—" Distomatosis humana." 78 (6), 384–387. [Discussion p. 387.]
c. NEGHME, A., DONCKASTER, R. & SILVA, R., 1950.—" *Diphyllobothrium latum* en Chile. Primer caso autóctono en el hombre." 78 (6), 410–411.

(398a) The existence of active substances of the histamine type in the perienteric fluid of *Ascaris lumbricoides* var. *suum* is demonstrated for the first time. Their presence explains nearly all the effects of this parasite on its host and is considered to be of far-reaching clinical importance. P.M.B.

(398b) Clinical details are given of two new cases of *Fasciola hepatica* in man in Chile. Rapid improvement followed daily dosage with 0·04 gm. of emetine until 0·5 cg. per kg. body-weight had been administered. *Limnaea viatrix*, the Chilean intermediate host of

F. hepatica occurs in Santiago in the ditches draining into the Rio Maipo and between Arica and Aysen, but not in Magallanes. P.M.B.

(398c) *Diphyllobothrium latum* has not hitherto been reported in Chile [but see Helm. Abs., Vol. 19, No. 58a, 1950] although, as Luhe has pointed out, potential intermediate hosts are abundant especially in the region of the southern lakes. A case is now recorded in a student 17 years of age who had camped near these lakes and had never left Chile. P.M.B.

399—Revista Médica del Hospital Español, Buenos Aires.

*a. PÉREZ ELIZALDE, U., 1950.—" Tratamiento quirúrgico de los quistes hidáticos del pulmón." 20 (1/4), 17–22.

400—Rhode Island Medical Journal.

a. ANON., 1950.—" Swimmer's itch." 33 (6), 310–311.

(400a) The Rhode Island State Department of Health has received reports of the sporadic occurrence of schistosome dermatitis following bathing and shell fishing in Narragansett Bay. The symptoms are described and physicians are asked to notify the Department of Health immediately of cases likely to have been acquired in these waters. It is stated that the intense itching will respond to calamine lotion and the antihistamine ointments. R.T.L.

401—Rice Institute Pamphlet. Houston, Texas.

a. READ, Jr., C. P., 1950.—" The vertebrate small intestine as an environment for parasitic helminths." 37 (2), 94 pp.

(401a) Read presents a general survey of those aspects of the physiology of the alimentary canal which appear to be of importance to the student of parasitology. Intestinal helminths may utilise, in addition to those present in the host's diet, a wide variety of substances in the secretions which enter the gut, e.g. in the gastric juice, the succus entericus and the hepatic and pancreatic secretions. Chemical and mechanical irritation of the intestinal mucosa by helminths may alter the intestinal secretion. The diarrhoea in Trichinella infection and that produced by trichostrongyles is probably due to mechanical irritation. The end-products of helminth metabolism may act as chemical stimuli. Substances which take part in the exocrino-enteric circulation may be absorbed by non-tissue feeding helminths and their removal by intestinal worms might possibly precipitate a deficiency syndrome in a host in a border line state of nutrition. It is suggested that different intestinal worms may depend in varying degree on the biochemical activities of intestinal micro-organisms. In the light of these data, Read then reviews the effects of bile salts and notes that the different constituent bile acids may determine host specificity. Essentially nothing is known of the vitamin requirements of helminths or the effect on helminths of the administration of various hormones to their hosts. He concludes that to understand host-parasite relationships, the physiology of host and parasite must be studied separately. A resynthesis of host and helminth physiology may then reveal entirely new concepts. It is imperative to develop techniques for cultivating intestinal helminths *in vitro*. Read considers this one of the most difficult and challenging problems of today. R.T.L.

402—Rivista di Parassitologia.

a. PELLEGRINI, D., 1950.—" Una nuova specie di larva di tenia (*Cysticercus madoquae*) nel dig-dig." 11 (4), 211–217. [English & French summaries p. 217.]

(402a) A cysticercus is described from *Madoqua* sp. in Somaliland and tentatively named *Cysticercus madoquae*. It is 5–8 mm. in length. The hooks number from 28 to 32. R.T.L.

403—Salubridad y Asistencia. Guatemala.

a. BURCH, T. A., 1950.—" Observaciones referentes al tratamiento de la oncocercosis con suramina y hetrazan." 3 (4), [Reprint 11 pp.]

(403a) Hetrazan has a rapid and spectacular effect on the microfilariae of *Onchocerca volvulus* but their disappearance is only temporary as the drug does not kill the adult worms. Treatment with hetrazan would therefore probably have no effect in reducing the total number of infected persons. The effect of suramin on the microfilariae is less rapid but as this drug also kills the adult worms their disappearance is permanent in the majority of cases. Burch therefore recommends suramin intravenously for the treatment of onchocerciasis. P.M.B.

404—Schweizer Archiv für Tierheilkunde.

a. MESSERLI, W., 1950.—" Weitere Untersuchungen über Magendarm-Parasiten des Rindes und des Schweines." 92 (10), 601–629. [English, French & Italian summaries pp. 626–628.]

(404a) Writing from Schwarzenburg, Messerli says that trichostrongylosis is the most frequent cause of chronic catarrhal gastro-enteritis in young cattle in his district. The occurrence of eggs in the faeces is very irregular. Phenothiazine is fairly successful. Doses of 0·1–0·15 gm. per kg. body-weight during two to three days is recommended but in weak animals this dose should be halved. *Strongyloides papillosus* annually causes severe damage in all the young cattle. A calf with necrotic enteritis due to great numbers of *Trichuris trichiura* [?*T. ovis*] had to be slaughtered. *Moniezia expansa* and *M. denticulata* were comparatively common. Sodium fluoride did not prove successful in eliminating *Ascaris lumbricoides* but phenothiazine gave good results. R.T.L.

405—Science.

a. THOMAS, L. J. & QUASTLER, H., 1950.—" Preliminary report of X-ray effects on the nematode *Rhabditis strongyloides*." 112 (2909), 356–357.
b. FAIRBAIRN, D. & REESAL, M. R., 1950.—" Complete elimination of microorganisms from an intestinal parasite (*Ascaris lumbricoides*)." 112 (2922), 792–793.

(405a) With *Rhabditis strongyloides*, obtained from under scabs of skin lesions resembling scabies in a dairy cow, rich cultures were produced on sterile nutrient agar plates sprinkled lightly with granulated blood fibrin. New generations were produced every three days. After being kept for several months in the dry state, they revived within a few hours in a film of water. The cultures were used to study irradiation effects. No changes were observed for several months, but eventually many larvae appeared in which there was marked alteration in the refractive index of the rhabditin granules of the intestine. In another culture numerous worms of both sexes had looped or spiral-like intestines. Some of the eggs had very thin shells and others had heavy albuminous coats as in ascaris eggs. In cultures from irradiated individuals, up to 50% showed visible changes similar to those which occurred occasionally in normal cultures. As these changes appeared in many generations removed from the irradiated worms, they are attributed to genetic effects. R.T.L.

(405b) *Ascaris lumbricoides* were rendered bacteriologically sterile, without harmful effects by transferring them, after washing in saline, to a broth containing : NaCl, 0·45% ; Sodium sulphathiazole, 1 : 250 ; neutral acriflavine, 1 : 5,000 ; α, α′ azobis (=chloroform-amidine=azochloramide), 1 : 5,000 ; dihydrostreptomycin sulphate, 40 mg. Each worm was placed in an Erlenmeyer flask. The flask was then placed in a large vacuum desiccator containing 300 ml. of freshly prepared 20% alkaline pyrogallol solution and evacuated to a residual pressure of 60 mm. of mercury. Atmospheric pressure was then restored with cylinder nitrogen gas and the process repeated twice. The pyrogallol removed any oxygen present as an impurity in the nitrogen. The desiccators and their contents were incubated

in a water bath in a constant temperature room for four hours. One ml. of penicillin solution (30,000 units) was added to each flask and the anaerobic treatment continued for another four hours. The treatment solution was then replaced by 50 ml. of nutrient broth containing 0·45 NaCl and adjusted to *p*H 7·8. In this the worms were incubated aerobically or anaerobically for 36 hours. This treatment was successful in about 85% of the worms. [For preliminary account see No. 337cn above.] R.T.L.

406—Scottish Farmer.

a. GREIG, J. R. & STAMP, J., 1950.—"Some diseases of sheep." 58 (3034), 1583.

(406a) This is a broadcast in "Farm Forum" in the Scottish Regional Programme and deals with the two principal diseases of sheep in Scotland, one of which is parasitic gastro-enteritis. While phenothiazine is the most generally effective remedy and is quite efficient against Ostertagia, it is not as good as copper sulphate against Nematodirus. Although ewes are much more resistant than younger sheep they can suffer severely under periods of stress such as after lambing. Haemonchus is limited in range in Scotland but may cause tremendous losses in lambs and ewes from severe anaemia although the affected animals may appear to be in good bodily condition. Fortunately phenothiazine is an effective remedy. Preventive measures are avoidance of overstocking, preventive drenching of grazing sheep with phenothiazine, and of lambs by alternate dosing with phenothiazine and copper sulphate. All ewes should be dosed at lambing time and every eight weeks thereafter, and lambs each month after they are six weeks old until the autumn and occasionally during the winter. Sheep-sick pasture should be rested for four weeks. Ploughing of permanent pastures is unnecessary as the sheep, not the pastures, are the reservoirs of infection. R.T.L.

407—Semana Médica. Buenos Aires.

a. MARTÍNEZ, D. J. J., GOYECHEA, J. & CALOURI, A. N., 1950.—"Enfermedades no frecuentes del aparato digestivo (*Strongyloides stercoralis—Fasciola hepatica*)." Año 57, 1 (20), 827–836.
b. HERMIDA SANZ, M., 1950.—"Cirugía del equinococo pulmonar." Año 57, 2 (37), 590.
c. RUIZ, V., 1950.—"La equinococosis del aparato genital femenino." Año 57, 2 (38), 591–595.

(407a) The pathological anatomy, symptomatology, diagnosis, prognosis and treatment of *Strongyloides stercoralis* and *Fasciola hepatica* are summarized. Clinical histories are given of two cases, one of *Strongyloides* and the other of *F. hepatica*, seen in residents in the Federal capital of the Argentine. R.T.L.

408—South African Medical Journal.

a. ANON., 1950.—"Schistosomiasis." [Editorial.] 24 (4), 54–55. [Also in Afrikaans pp. 54–55.]

(408a) [This is a summary of a paper by Shousha which appeared in *Bull. World Hlth Organ.*, 1949, 2 (1), 19–30. For abstract see Helm. Abs., 18, No. 172a.]

409—Sovetskaya Meditsina.

a. SEMENOVA, N. E., 1950.—[Sankafen treatment of ascaridosis.] Year 1950, No. 4, p. 31. [In Russian.]
b. IOSIFOV, V. G., 1950.—[Method of treatment of trichocephaliasis.] Year 1950, No. 4, p. 32. [In Russian.]
c. MALYUGIN, N. S., 1950.—[Post-operative complications in ascaridosis.] Year 1950, No. 6, pp. 35–36. [In Russian.]
d. SEMENOV, V. S., 1950.—[Echinococcal diseases.] Year 1950, No. 7, pp. 19–20. [In Russian.]
e. MALYUGIN, N. S., 1950.—[Clinical aspects, diagnosis and surgical treatment of echinococcus cysts of the liver.] Year 1950, No. 7, pp. 21–23. [In Russian.]
f. SEMENOVA, N. E., 1950.—[Treatment of taeniasis with the extract of pumpkin seeds.] Year 1950, No. 7, pp. 30–31. [In Russian.]
g. BAGAEVA, M. I., 1950.—[Dermatitis produced by sankafen.] Year 1950, No. 11, p. 28. [In Russian.]

h. OLEINIK, S. F., 1950.—[Ascariasis of the liver.] Year 1950, No. 11, p. 35. [In Russian.]
i. STOLLYAR, A. A., 1950.—[Treatment of children with sankafen.] Year 1950, No. 11, pp. 35–36. [In Russian.]
j. AKSENOVA, F. M., 1950.—[Ascariasis in infant one year of age.] Year 1950, No. 11, p. 36. [In Russian.]

(409a) Semenova reports the results of treating children and adults for ascariasis with sankafen tablets (consisting of santonin, calomel and phenolphthalein). According to her the results were better than those obtained with santonin alone. She recommends for the full treatment of an adult 16–20 tablets given in equal doses on two successive days and for children up to ten years of age a number of tablets equal to the age, divided in two doses and given on two successive days. There were no after effects. C.R.

(409b) Iosifov recommends the following treatment against trichuriasis. 10 c.c. of a 15% water suspension of thymol warmed to 37°C. and shaken is introduced through a duodenal tube. Before treatment food is withheld. After treatment food is not allowed for two hours after which time the patient is given a saline laxative. Next day the faeces are examined for eggs and if positive the treatment is repeated. In most cases only one or two courses are necessary. C.R.

(409f) Semenova reports her results from using dry extract of pumpkin seeds, and also dry extract of pumpkin seeds (dose 30–40 gm.) followed by extract of male fern (2·5–3 gm.) in the treatment of 23 people infected with tapeworms (*Diphyllobothrium latum*, *Taenia solium*, and *T. saginata*). According to her, dry extract of pumpkin seeds is effective, but requires to be standardized. C.R.

(409g) Bagaeva reports that general dermatitis followed the treatment with sankafen of a child six years old, and attributes this to the presence of calomel in the sankafen. C.R.

(409i) Sankafen tablets preceded by an enema are reported to have given good results against *Ascaris lumbricoides* in 434 children. C.R.

410—Stain Technology.

a. CIORDIA, H. & JOHNSTON, N. C., 1950.—" Rapid staining of nematodes for taxonomic studies." 25 (2), 114.
b. WATTS, N. P. & BOYD, G. A., 1950.—" *Schistosoma mansoni* miracidium under phase difference microscopy." 25 (3), 157–160.

(410a) Ciordia & Johnston describe a technique for the staining of nematodes. The worms are fixed in Carnoy's fluid (6:3:1) after washing in saline. A piece of Eye-Ease Hammermill Filler paper is put into the fixative and left overnight. The specimens are then removed, washed in 95% alcohol, gradually hydrated and mounted in Yetwin's medium. S.W.

(410b) That living *Schistosoma mansoni* miracidia show more of the internal structures under phase contrast illumination than under the ordinary bright field is illustrated by two photographs. The miracidia were immobilized by adding a 1% solution of chlorobutanol to the water until the ciliary motion ceased. The motion of the flame cells was not affected. R.T.L

411—Stanford Medical Bulletin.

*a. MOVITT, E. R., MACKENBROCK, F. C. & CLEMENT, C. E., 1950.—" Periarteritis nodosa ; the antigens of *Trichinella spiralis* and poison oak as exciting causes." 8 (2), 59–65.

412—Terre et la Vie. Paris.

a. PARIZY, E. R., 1950.—" L'anguillule ou micro-ver, nourriture idéale pour les alevins de poissons et les larves de batraciens." 97 (1), 43–45.

(412a) In the breeding of tropical fishes and batrachians there is a critical point for the fry and larvae when infusoria are insufficient as food and daphnia are still too large to be swallowed. When finely sieved egg yolk and chopped *Enchytraeus* have been used

few survived. Mme. Grindal has introduced the use of a soil-inhabiting eelworm, *Anguillula silusae*, which is easily swallowed. As it lives only 12 to 24 hours in water none remain to pollute the water. It is readily cultivated at 22°C. to 28°C. in the dark. As a culture medium boiled or raw milk, oat flakes or ersatz coffee grounds can be used. R.T.L.

413—Therapie der Gegenwart.

a. SCHMIDT, H. W., 1950.—"Vögel und Trichinose. (Pathologie und Übertragung.)" **89** (5), 155–156.

(413a) Schmidt draws attention to the possibility of birds transmitting Trichinella from one mammalian host to another. Many birds (e.g. crows and eagles) feed on carrion which may be infected and although Trichinella do not develop in avian hosts encysted worms may be passed ouf in the faeces or may be consumed (in a viable condition) by animals such as foxes, badgers, dogs and cats who might devour the carcasses of infected birds. The risk of such mammal-bird-mammal transmission may be greatly reduced by prohibiting the feeding of fox and badger flesh to birds and by suitably treating infected carcasses. A.E.F.

414—Tidsskrift for Frøavl.

a. FRANDSEN, H. N., 1950.—"Hvidkløverstammernes Resistens mod Kløveraal." **20** (1), 4–5.

(414a) Some infection experiments in the laboratory have shown that English wild white clover and Lodi, a Ladino clover, are more resistant to white clover eelworm than Danish strains such as Morsø and Øtofte. S.B.

415—Tidsskrift for Landøkonomi.

a. WAGN, O., 1950.—"Undersøgelser og Forsøg over Kløverålens Udbredelse, Skadevirkning, Smitteforhold og Bekaempelse." Year 1950, No. 3, pp. 157–160.

(415a) [This is a summary of a paper by Frederiksen in *Beretn. Planteavl. Sjaelland*, 1950, Year 1949, pp. 245–279. For abstract see No. 287a above.]

416—Tijdschrift over Plantenziekten.

a. SEINHORST, J. W., 1950.—"De betekenis van de toestand van de grond voor het optreden van aantasting door het stengelaaltje (*Ditylenchus dipsaci* (Kühn) Filipjev)." **56** (5/6), 289–348. [English summary pp. 345–347.]

(416a) Seinhorst has investigated the relationship between soil conditions and stem eelworm disease. Active spread of *Ditylenchus dipsaci* occurs from plant to plant in the moist dense vegetation of red clover fields and through the loamy or clay soils in crops of onions. The patches of infestation tend to be round. Infestation is more frequent on heavier soils in spring and summer than on light ones. Cold, wet weather conditions promote greater damage by stem eelworms, by creating favourable soil conditions for infestation. Passive spread of stem eelworm in rye on sandy soils occurs in the direction of the cultivations and active spread seems to be inhibited in these soils. Organic manures had no effect on the attack on rye or on onions, but controlled the disease in rye on sandy soil. The effect of the previous crop is not a simple one. The degree of attack depends on the type of soil and its treatment. The type of soil can affect the activity of eelworms but has no effect on the predisposition of red clover to attack and development of symptoms. The soil moisture equivalent is a critical factor in eelworm activity and a high moisture content favours infection. Good drainage may be of importance for control. Eelworms are more active at low than at high soil temperatures. Factors must be present in the soil, the unfavourable effect of which increases with increase of temperature. Partial sterilization by various means eliminates these factors. New [and important] methods of continuous extraction of nematodes in quantity, by the use of mist sprays are described and also methods by which the activity of eelworms in soil were determined. J.B.G.

417—Transactions of the American Microscopical Society.

a. TODD, A. C., HANSEN, M. F., KELLEY, G. W. & WYANT, Z. N., 1950.—"Susceptibility of hybrid and standard-bred chicks exposed to infection by the tapeworm *Raillietina cesticillus* (Molin, 1858)." **69** (4), 353–356.
b. MORGAN, B. B. & SCHILLER, E. L., 1950.—"*Porrocaecum angusticolle* (Nematoda) in North American hawks." **69** (4), 371–372.
c. TODD, A. C., HANSEN, M. F., KELLEY, G. W. & WYANT, Z. N., 1950.—"Age differences in virulence of *Ascaridia galli* eggs." **69** (4), 394–397.
d. KROGSDALE, J. T., 1950.—"Survey of endoparasites in California valley quail of the Palouse area." **69** (4), 398–402.

(417a) Todd *et al.* demonstrate that DeKalb 105 cockerels withstand the effect of parasitism with *Raillietina cesticillus* better than New Hampshire pure bred chickens. But they appear to be more susceptible to infection, for similar infective doses in each group were followed by heavier numbers of adults in the hybrid chicks. P.A.C.

(417b) Morgan & Schiller record the presence of *Porrocaecum angusticolle* from *Buteo jamaicensis borealis, Accipiter v. velox, Circus hudsonius, Buteo p. platypterus* and *Accipiter cooperi* in North America. P.A.C.

(417c) Ova of *Ascaridia galli* reach a peak of infectivity at 14–21 days old and cause the greatest host injury as expressed in weight losses in chicks. As they age, their virulence decreases. P.A.C.

(417d) Krogsdale reports the occurrence of *Rhabdometra odiosa* in *Lophortyx californica vallicola* and *Oreortyx picta*. These appear to be new host records. P.A.C.

418—Transactions of the Royal Society of Tropical Medicine and Hygiene.

a. COLBOURNE, M. J., EDINGTON, G. M. & HUGHES, M. H., 1950.—"A medical survey in a Gold Coast village." **44** (3), 271–290.
b. BACKHOUSE, T. C. & HEYDON, G. A. M., 1950.—"Filariasis in Melanesia: observations at Rabaul relating to incidence and vectors." **44** (3), 291–306.

(418a) During a medical survey of the village of Kwansakrom near the southern edge of the high forest country in the cocoa belt of the Gold Coast, 240 individuals were examined for helminth infections. Of these, 52% showed hookworm eggs without clinical manifestations, 75·8% harboured Ascaris eggs and 3·3% Trichuris eggs in their faeces; 9·1% had *Schistosoma haematobium* eggs in their urine. None showed evidence of Taenia infections. Blood films made between 9 a.m. and noon were negative. No films were taken at night. Skin smears of 49 out of 234 individuals gave *Dirofilaria streptocerca*, and in the skin of 28 of these there was a mild "presbydermia" resembling that seen elsewhere in the aged and in onchocerciasis, but no cases of onchocerciasis were noted. In dissections of *Culicoides grahami* a nematode larva was found on one occasion. It was considered to be a developmental stage of *D. streptocerca* as *Acanthocheilonema perstans* was apparently absent from this area. 133 individuals (51·8%) gave a history of guinea-worm infection, but only one case was actually observed. R.T.L.

(418b) This paper brings together a number of observations on the microfilarial incidence in various districts of New Guinea and the adjacent islands, and in Makada and Matty Islands. No evidence of a non-periodic filaria in New Guinea was obtained. The microfilaria in this region is nocturnal and is diagnosed as that of *Wuchereria bancrofti* but the *Culex fatigans* of Rabaul proved a poor experimental host. *Aëdes scutellaris* and *A. aegypti* could not be infected. *Armigeres* sp. and nine other culicines were eliminated as vectors. Evidence pointed to *Anopheles punctulatus farauti* and possibly other anophelines as the chief vectors of *W. bancrofti* in Melanesia. *A. annulipes* proved a good experimental host. A successful experiment in reversing periodicity by a reversal of the hours of sleep is recorded. R.T.L.

419—United States Armed Forces Medical Journal.

a. HORTON, Jr., S. H., 1950.—" Treatment of creeping eruption with hetrazan. Report of 13 cases." 1 (6), 668–671.
b. ARONSTAM, E. M., 1950.—" Acute abdominal manifestations of ancylostomiasis. Report of 2 cases." 1 (8), 935–937.

(419a) Thirteen patients with creeping eruption were treated with hetrazan. There were two failures and two patients failed to return for examination. The dose, computed on 2 mg. per kg. body-weight was given three times daily before meals. There were no untoward reactions. Pruritus usually became minimal in 48–72 hours. About three weeks was usually required to obtain a clinical cure. Horton considers hetrazan a safe, non-toxic and effective treatment for creeping eruption. R.T.L.

420—Universitet i Bergen Årbok.

a. BRINKMANN, Jr., A., 1950.—" On the morphology of *Microfilaria lagopodis* (Haaland 1928)." Year 1949, No. 4, 13 pp.
b. BRINKMANN, Jr., A., 1950.—" Microfilariae from the ruffed grouse (*Bonasa umbellus* (L.)) in Ontario, Canada." Year 1950, No. 3, 12 pp.

(420a) *Microfilaria lagopodis*, described by Haaland in 1928 from the Norwegian willow grouse *Lagopus lagopus*, is considered a distinct form nearly related to *M. colubroides*, identical with M. Sørum's microfilaria (1949) from the black grouse (*Lyrurus tetrix*) and with Sambon's pre-occupied *Filaria smithi* (1907) from *L. scoticus*. R.T.L.

(420b) Brinkmann Jr. describes and illustrates *Microfilaria fallisi* n.sp. and *M. clarkei* n.sp., from *Bonasa umbellus* found in Ontario. No adult filariids have so far been found in the ruffed grouse. R.T.L.

421—Veterinariya.

a. LENSHIN, S., 1950.—[The clinical picture and treatment of bunostomiasis in sheep.] 27 (9), 36–39. [In Russian.]
b. YAKOVLEV, C. A., 1950.—[Surgical method of control of coenurosis in sheep.] 27 (11), 47–48. [In Russian.]
c. BADANIN, N. V., 1950.—[An interesting case of dioctophymosis in the kidneys of dogs.] 27 (11), 55–56. [In Russian.]
d. MURAVEV, L. D., 1950.—[Atypical fascioliasis in sheep.] 27 (12), 28–29. [In Russian.]

(421a) Heavy infestations (5–6,000 specimens) of *Bunostomum trigonocephalum* in sheep in Chelyabinsk area are recorded. The disease was characterized by severe diarrhoea, progressive loss of condition with anaemia, hydraemia and toxaemia. The death rate reached 60–80%. The symptoms developed mainly by the end of August and the beginning of September. Phenothiazine, ichthyol and carbon tetrachloride were tried but the first two were ineffective. Carbon tetrachloride was given in gelatin capsule in a dose of 3 ml. for adult sheep and 1–2 ml. for lambs, depending on their condition. After dosing Glauber's salt was given. The animals were allowed to drink water before and after dosing. In 1947 27,000 sheep (out of which only six showed toxic effects) and in 1948 10,000 sheep were treated in this way. As in this district bunostomiasis occurs in lambs about 5th August treatment should be given not later than 15th August. C.R.

(421b) Yakovlev operated on 220 sheep infected with *Coenurus cerebralis* and obtained complete recovery in 114 (51·8%). He employed as local anaesthetics novocaine or cocaine, and then made an incision of the skin and subcutaneous tissue in the region above the situation of the cyst. A portion, 8–9 mm. in diameter, of the atrophied bone was removed. Using a probe he then carefully allowed a portion of the cyst to extrude through the opening. The head of the sheep was then turned and the cyst carefully pulled out. After suturing and the application of iodine and collodium, a sterile bandage was applied. C.R.

(421c) Badanin reports *Dioctophyme renale* in a seven-month-old puppy. There were seven fully matured specimens (four females and three males) in the right kidney and partly in the bodycavity. The mother of this puppy at autopsy, was also found to be infected with *D. renale* in the right kidney (two females and one male). Other puppies from the same and the next litter when autopsied were free from infection. C.R.

(421d) Muravev describes the occurrence of fascioliasis in sheep with atypical symptoms (mainly nervous). He obtained good results from injection into the rumen of 1–4 ml. of carbon tetrachloride given in two doses with a three-day interval. C.R.

422—Veterinary Medicine.

a. TODD, A. C., HANSEN, M. F., WYANT, Z. N., CROWDUS, D. H. & CAWEIN, M. J., 1950.—" Continuous phenothiazine therapy for horses. III. The second year of treatment." **45** (11), 429–434.
b. OLSEN, O. W., 1950.—" Natural infection of chinchillas with the mouse tapeworm, *Hymenolepis nana* var. *fraterna*." **45** (11), 440–442.
c. FOLEY, R. J., 1950.—" The treatment of canine filariasis." **45** (12), 485–489, 491.

(422a) Todd *et al.* have continued for a second year their experiments [see Helm. Abs., **18**, Nos. 282a & d] with small daily doses of phenothiazine on strongyle infected horses. No harmful effects ensued. The strongyle infections were reduced in proportion to the amounts of phenothiazine administered. The effect on the fertility of the eggs was such as to result in significant reductions in the number of immature *Strongylus vulgaris* in the mesenteric artery and its branches. No strains resistant to phenothiazine developed. R.T.L.

(422b) A second case of infection of the chinchilla with *Hymenolepis nana* var. *fraterna* is reported. There was loss of weight, emaciation and depression followed by a terminal mild diarrhoea. Post-mortem examination revealed a recent intussusception and a massive *H. fraterna* infection. Owing to the ease and rapidity with which this infection can occur in the chinchilla its control calls for rigid sanitation. R.T.L.

(422c) Of 57 *Dirofilaria immitis* infected dogs treated intravenously with fouadin every second day, 53 (93%) were cleared of microfilariae in 24 to 40 days but six (11%) were again positive 120 days later. There were four deaths. Of 63 dogs treated orally with caricide 59 (94%) were negative in 7 to 65 days and remained so. 10 mg. per lb. body-weight three times daily proved to be the optimum dosage. Of 25 dogs 21 (84%) were successfully treated with caparsolate sodium intravenously at the rate of 1 c.c. per 10 lb. body-weight. Two died after the second injection and severe systemic reactions occurred in the heavily infected animals. With a combination of caricide and caparsolate sodium at the respective doses ten dogs all became negative in 15 days, and had remained so six months later. R.T.L.

423—Veterinary Record.

a. LEE, R. P., 1950.—" The fate of hexachlorethane in ruminants." [Correspondence.] **62** (46), 696.
b. McGAUGHEY, C. A., 1950.—" Preliminary note on the treatment of spirocercosis in dogs with a piperazine compound, caricide (Lederle)." **62** (51), 814–815.
c. STEWARD, J. S., 1950.—" Notes on some parasites of camels (*Camelus dromedarius*) in the Sudan." **62** (52), 835–837.
d. STEWARD, J. S., 1950.—" Trichostrongylosis and haemonchosis in the camel: their recognition and response to phenothiazine." **62** (52), 837–839.
e. BIDDIS, J. K., 1950.—" A new taeniacide for dogs." **62** (52), 841.

(423a) If, as Olsen believes, hexachlorethane achieves its fasciolicidal effect by being excreted in the bile Lee asks how it is absorbed from the bowel, in what form it is excreted, and why ruminants can absorb the drug while dogs apparently cannot. R.T.L.

(423b) Five cases of *Spirocerca lupi* infection of dogs in Ceylon are reported to have received beneficial effects from the administration of hetrazan in doses of approximately

10 mg. per lb. body-weight, but in the author's opinion a prolonged course appears to be necessary to effect a cure. R.T.L.

(423c) *Camelus dromedarius* in the Sudan is infected with *Haemonchus longistipes* and *Trichostrongylus probolurus*. The embryonated eggs of *Strongyloides* sp. were present in the faeces of two camels. Microfilariae of *Dipetalonema evansi* were present in the blood, and adult filariids presumed to belong to this species were found in the aorta in several instances. *Onchocerca fasciata* occurred in subcutaneous fibrous nodules on the neck, head and stifle joint. Hydatids were frequently present in the lungs and incomplete specimens of *Stilesia hepatica* occurred in the small intestine in large numbers associated with cirrhosis of the liver. R.T.L.

(423d) In *Trichostrongylus probolurus* the females usually contain about 15 eggs whereas in *Haemonchus longistipes* they number several hundreds. This difference is of importance in assessing the relative worm burden from an examination of the faeces of camels. The infective larvae of *T. probolurus* are readily distinguishable from those of *H. longistipes* for the former have short tails. Ten camels were treated with phenothiazine in aqueous suspension without fasting. It is concluded that camels require not less than 0·6 gm. per kg. live body-weight for effective treatment. R.T.L.

(423e) In dogs "Dicestal" (2 : 2'-dihydroxy-5 : 5'-dichlorodiphenylmethane) induces a rapid degenerative process in tapeworms within the intestine and they are unrecognizable in the faeces. The effectiveness of the drug, which could only be assessed from the disappearance of segments from the faeces, was spectacular. Over fifty cases were treated, all successfully, and showed an appreciable increase of weight. The dosage recommended is 0·5 gm. per 6 lb. body-weight but 0·5 gm. per 8 lb. body-weight gave equally good results. Treatment was given immediately before the main meal, and subsidiary meals on that day were withheld. R.T.L.

424—Vie et Milieu. Paris.

a. BOUGIS, P., 1950.—"Méthode pour l'étude quantitative de la microfaune des fonds marins (meiobenthos)." 1 (1), 23–37.
b. THÉODORIDÈS, J., 1950.—"Les nématodes de coléoptères Scolytides de France." 1 (1), 53–68.
c. CHABAUD, A. G., 1950.—"Sur le réencapsulement des larves d'Acuariidae." 1 (1), 69–73.
d. CAMPANA-ROUGET, Y. & THÉODORIDÈS, J., 1950.—"*Geotrupes spiniger* Marsh nouvel hôte du nèmatode *Physocephalus sexalatus* Molin." 1 (1), 98–99.
e. THÉODORIDÈS, J., 1950.—"Les nématodes associés à des géotrupides (Col. Scarabaeoidea) des Pyrénées Orientales et d'Espagne." 1 (2), 200–201.
f. CAMPANA-ROUGET, Y., 1950.—"Un cysticerque polycéphale chez le mulot (*Apodemus sylvaticus* L.)." 1 (2), 202–206.

(424b) Over 100 species and subspecies of nematodes have hitherto been recorded from 30 of the 140 species of Scolytidae found in France. They are now listed under their respective hosts. Théodoridès remarks on the absence of Mermithidae and Gordiacea in the Scolytidae in contrast to their frequency in other groups of Coleoptera. R.T.L.

(424c) Several nematode larvae were found encysted in a snake *Elaphe scalaris* captured in the Eastern Pyrenees. Those in the intestinal wall are indentified as larval *Physocephalus sexalatus* and those in the stomach wall as third-stage larvae of *Synhimantus* (*S.*) *robertdollfusi*. An adult female of *S.* (*S.*) *robertdollfusi* was found in *Circus aeruginosus* in the neighbourhood. R.T.L.

(424d) A larval *Physocephalus sexalatus* has been found in *Geotrupes spiniger* in the Eastern Pyrenees. R.T.L.

(424e) Théodoridès records the presence of larval Diplogasterinae in *Geotrupes* (*G.*) *niger*, *G.* (*G.*) *spiniger* and *G.* (*G.*) *stercorarius* in the Eastern Pyrenees and Spain ; and in *G.* (*G.*) *niger*, *G.* (*G.*) *spiniger* and *G.* (*Anoplotrupes*) *stercorosus* in the Province of Barcelona. R.T.L.

(424f) A polycephalous taenioid cyst about the size of a nut occurred in the peritoneal cavity of an *Apodemus sylvaticus* captured at Banyuls in the Eastern Pyrenees. It is identified as a larva of *Taenia taeniaeformis*. R.T.L.

425—Wiener Klinische Wochenschrift.

a. LANG, F., 1950.—"Ein Fall von primärem Echinococcus des Samenstranges." 62 (19), 333.

426—World Health Organization. Technical Report Series.

a. ANON., 1950.—"Joint OIHP/WHO Study-Group on Bilharziasis in Africa. Report on 1st Session, Cairo, Oct. 24 to 29, 1949." No. 17, 16 pp.

(426a) The observations and recommendations made by a study group cover (i) the geographical distribution of *Schistosoma haematobium* and *S. mansoni* and their vectors, (ii) the significance of bilharziasis as a cause of mortality, morbidity and loss of productive power, (iii) the susceptibility and immunity to *Schistosoma* infection, (iv) diagnostic and control measures. R.T.L.

427—Zeitschrift für Hygiene und Infektionskrankheiten.

a. SCHMIDT, J. & MENDHEIM, H., 1950.—"Epidemiologisch-statitische Untersuchung über die Verbreitung der Oxyuriasis." 131 (1), 65–68.
b. SCHMIDT, J., SCHEID, G. & MENDHEIM, H., 1950.—"Über die Verbreitung von Wurmeiern durch Papiergeld." 131 (2/3), 316–317.

(427a) Schmidt & Mendheim have examined for Enterobius infection 88 inmates of a Munich orphanage (one child of three years, 82 children aged 6–16 years, and three adult females). In each case four cellophane swabs were taken at three-weekly intervals. Forty-seven out of 48 males and 29 out of 40 females were found to be infected : of the boys only 21% were positive for all four swabs. Only 5% of the infected children were positive to faecal examination, a further indication of the unsuitability of this method for diagnosing Enterobius infection. Vaginal smears from 3·5% of the girls were positive. Girls were more lightly infected than boys. A.E.F.

(427b) Schmidt, Scheid & Mendheim report on tests carried out on currency notes to determine whether they can transmit helminth ova. They examined 120 notes of 5 and 10 pfennigs value by a modification of Graham's scotch-tape technique for diagnosing Enterobius infection : 15 notes were positive for Enterobius ova (mostly embryonated) and one was positive for Ascaris. There was no correlation between the dirtiness of the notes and the incidence of infection. A.E.F.

428—Zeitschrift für Pflanzenkrankheiten (Pflanzenpathologie) und Pflanzenschutz.

a. KOTTHOFF, P., 1950.—"Die Verbreitung von *Ditylenchus dipsaci* (Kühn) als Schädling an landwirtschaftlichen Kulturpflanzen in Westfalen." 57 (1/2), 4–14.
b. SCHAERFFENBERG, B., 1950.—"Untersuchungen über die Bedeutung der Enchytraeiden als Humusbildner und Nematodenfeinde." 57 (5/6), 183–191.

(428a) Kotthoff gives a survey of *Ditylenchus dipsaci* infestations in Westphalian agricultural crops based on 40 years records and discusses the effect of climate, soil type and the kind of crop grown in relation to eelworm disease. Temperature and rainfall cannot be correlated with severity of attack. Soil reaction also plays no part in determining the incidence of eelworm disease. He discusses the question of biological races and concludes from the data assembled and experimental findings that (a) the "rye race" attacks rye heavily ; oats, buckwheat and *Trifolium hybridum* lightly ; barley, wheat and maize, red, white and yellow clover, lucerne, yellow lupin not at all, or only lightly ; hemp, flax and potatoes moderately, beet lightly, carrots and turnips not at all. (b) The "beet race" will infest the same hosts as the "rye race" and in addition attacks maize, carrots and cucumber heavily ; lupin lightly. A limited number of pot experiments carried out with the "red clover race" showed it capable of attacking rye heavily whereas barley, wheat and *Trifolium hybridum* were unaffected. T.G.

(428b) In this preliminary report Schaerffenberg claims to show that by the addition of enchytraeids of the genera *Fridericea* and *Enchytraeus* to pots of soil containing growing sugar-beet plants showing symptoms due to *Heterodera schachtii*, the disease may be arrested and the plants recover in two to three weeks. He made periodic counts of enchytraeids and nematodes and found that the latter decreased in numbers while the former increased. If the enchytraeids are added to the soil containing the diseased sugar-beets when the nematodes have matured, the plants do not recover. The author states that the enchytraeids do not attack the mature male and female nematodes, but that the young stages of the enchytraeids penetrate the host roots which have been entered by the larval nematodes and there destroy the nematodes by digestive secretions and subseqeunt absorption. He concludes that the beet nematodes may be kept under control by carefully regulated dunging or green-manuring of the soil, thus creating conditions—rich humus and moisture—in which the enchytraeids prosper. M.T.F.

429—Zeitschrift für Tropenmedizin und Parasitologie.

a. MINNING, W. & VOGEL, H., 1950.—"Immunbiologische und epidemiologische Untersuchungen bei 3 Fällen von menschlicher Fasciolose." 1 (4), 532–553. [English summary p. 551.]
b. MENDHEIM, H. & SCHEID, G., 1950.—"Untersuchungen über den Wurmbefall in einigen Stadt- und Landkreisen Oberbayerns." 1 (4), 553–560. [English summary p. 560.]
c. ENIGK, K., 1950.—"Die Biologie von *Capillaria plica* (Trichuroidea, Nematodes)." 1 (4), 560–571. [English summary p. 570.]
d. NÁJERA, L., 1950.—"Ein Verfahren für die Konzentration von Helmintheneiern in den Faeces." 1 (4), 571–575. [English & Spanish summaries p. 575.]
e. KEMPSKI, H., 1950.—"'Pan-Colon-Klysma'—eine neue Einlaufmethode und ihre Bedeutung für die Tropenpraxis." 1 (4), 575–586. [English & Spanish summaries pp. 585–586.]
f. ENIGK, K., 1950.—"Zur Epidemiologie des Strongyloidesbefalles der Haus- und Nutztiere." 2 (1), 124–142. [English summary p. 141.]
g. SCHEID, G. & MENDHEIM, H., 1950.—"Die Lanzettegelinfektion (Dicrocoeliasis) beim Menschen nebst Mitteilung eines neuen Falles." 2 (1), 142–150. [English summary p. 149.]
h. ENIGK, K., 1950.—"Zur Entwicklung von *Strongylus vulgaris* (Nematodes) im Wirtstier." 2 (2), 287–306.

(429a) The sera of three children infected with *Fasciola hepatica* gave a positive complement fixation reaction with an alcoholic extract of Fasciola but there was no definite relation between the titre reached and the clinical symptoms or the eosinophilia. The reaction continued for six months after a cure had been effected. Specific reactions were also obtained with Fasciola extract in normal saline solution. Sera from the fascioliasis cases were negative to Bilharzia extracts but extracts of Bilharzia cercariae and of the digestive glands of snails infected with various trematodes indigenous in Germany gave positive reactions. Two out of five cestode extracts gave doubtful or positive results. Sera of human cases with cestode infection gave no reaction. Fasciola antigen up to 1 : 100,000 gave a positive skin reaction in one child and in the other two reached 1 : 10,000. Skin tests with Fasciola antigen were also positive in cases of schistosomiasis. One of the fascioliasis cases reacted with Bilharzia antigen and two were negative with Echinococcus antigen. R.T.L.

(429b) Mendheim & Scheid have carried out a helminth survey of the inhabitants of Upper Bavaria. A total of 826 persons was examined and the numbers found to be infected were as follows: Enterobius, 62% of children and 44·3% of adults; *Ascaris lumbricoides*, 14·3% of children and 11·3% of adults; Trichuris, 9% of children and 8·5% of adults. There were 18 cases of Taenia, two of *Hymenolepis diminuta* and one of *H. nana*. Ascaris infection was higher in rural areas. A.E.F.

(429c) Enigk has worked out the life-cycle of *Capillaria plica*, a parasite of the urinary tract of dogs, foxes and wolves. Eggs hatch in the earthworms *Lumbricus herculeus* [*L. terrestris*] and *Dendrobaena subrubicunda*. The larvae penetrate the intestinal wall within a few hours and settle in the connective tissue of the body-cavity. Larvae are infective for the final host about 24 hours after ingestion of eggs by earthworms. Second-

stage larvae develop in the wall of the small intestine of the definitive host within eight to ten days and the third stage is found in the bladder on or about the 30th day. Fourth-stage larvae and adults develop in the bladder ; the prepatant period is 58–63 days. *Capillaria plica* infection retards the growth of young foxes. Attempts to treat the infection with phenothiazine and hetrazan were unsuccessful. As prophylactic measures, the housing of foxes in wire-bottomed enclosures and the use of DDT and other contact insecticides to destroy earthworms in fox runs are recommended. A.E.F.

(429d) Nájera describes a technique for concentrating helminth ova from faecal specimens. A glass vessel 72 mm. high is used, the lower part of which is 24 mm. in diameter tapering to 8 mm. within 6 mm. of the top. The faeces, together with some glass beads, are put in the wide end of the vessel which is then sealed with a cork or rubber stopper. Salt solution is poured in the narrow end until the vessel is nearly full. Then the stopper is inserted and the vessel shaken until a homogeneous suspension is obtained. The stopper (narrow end) is now removed, the vessel is filled to the brim with salt solution and a cover glass placed on top. After 20–30 minutes the cover glass is removed with forceps, placed on a slide and examined. This technique is said to reveal 25% more helminth ova than are shown by other flotation methods. A.E.F.

(429e) Kempski describes an improved method of colonic irrigation which is said to be of value in the treatment of enterobiasis, trichuriasis, ascariasis, hookworm disease, and strongyloidiasis. A.E.F.

(429f) *Strongyloides westeri* of horses, *S. ransomi* of the pig and *S. myopotami* of *Myocastor coypus*, and *S. papillosus* of sheep and cattle are proved to be specifically distinct by cross-infection experiments. Development outside the hosts revealed no differences but *S. myopotami* differed from the others in the size of the free-living stages. The *Strongyloides* species of domesticated animals were readily transferable to rodents but not to carnivores. R.T.L.

(429g) The biology, clinical importance and pathology of *Dicrocoelium* infections in man are summarized. Details are given of a case observed in Munich and the results of an intradermal test discussed. Fouadin induced a rapid and tenfold increase in the eggs in the faeces but these then decreased and disappeared on the tenth day of treatment. R.T.L.

(429h) Viable larvae of *Strongylus vulgaris*, when administered in doses of 800 to 8,300 to parasite-free foals, 3–6 weeks old, caused death from haemorrhagic or anaemic infarctions of the small and large intestine in 8–19 days. The larvae having exsheathed in the stomach and small intestine, entered the mucous membrane of the caecum and ventral colon and underwent their third ecdysis in the submucosa. The fourth-stage larvae entered the submucous arterioles and migrated in the intima of the arteries of the intestine. Usually they were unable to penetrate the lamina elastica interna. The migrating larvae within the small vessels showed thrombic fibrin only at their tails, while in the larger arteries the entire larvae have a fibrinous envelope. In the aorta migration is still more difficult as numerous round cells surround the larvae. The endothelium is protected by thickening of the intima which forms a barrier to larval migration. Consequently, the majority of the larvae are jammed in the anterior mesenteric artery. On the eleventh day the larvae begin to migrate into the ramifications of this artery. By the fifteenth day migration slows up and the larvae are found coiled up within the arterial wall or are surrounded by thrombic coagula. R.T.L.

430—Zoologicheski Zhurnal.

a. DUBININA, M. N., 1950.—[Destrobilisation in tapeworms and its causes.] **29** (2), 147–151. [In Russian.]

b. VOORE, V. N., 1950.—[The distribution of tapeworms (*Ligula*) in Estonian waters.] **29** (4), 323–326. [In Russian.]

c. DUBININA, M. N., 1950.—[New data on the morphology and biology of representatives of the genus *Ligula*.] 29 (5), 417–426. [In Russian.]

(430a) Dubinina in her review of the literature on destrobilization thinks that this phenomenon should be considered as a morpho-physiological adaptation arising in connection with rapid changes in the habitat of the parasite, influenced by varying degrees of emaciation and the disturbance of its physiological functions. The parasite reduces its body to a minimum thus reducing also its food requirements to a minimum. This makes it possible for it to prolong its life in the host and, when favourable conditions return, to build up again its strobila and to start reproduction. Dubinina thinks that a proper study of this phenomenon is of great practical importance because the knowledge of its causes will produce a physiological basis for the control of these parasites. C.R.

(430b) Voore has studied the distribution of Ligula among fishes in Estonia. He found Ligula in fish from 9 of the 14 lakes examined. Of the 20 species studied, bream was most commonly infested. The degree of infestation by Ligula depends mainly on the age of fish and concentration of birds in the area. Plerocercoids were found mainly in fish of 2–4 years of age. The weight of the parasite on an average, in relation to that of the host, is 13·75% (maximum 24·5%). The parasites interfere with the development of the genital organs and with the general growth of the fish. In Estonia, adult Ligula were found in *Colymbus arcticus*, *Mergus serrator*, and *Podiceps cristatus*. C.R.

(430c) Dubinina is of the opinion that *Ligula intestinalis* is a collective name for many different species. She considers the tapeworms found in the small intestine of *Podiceps cristatus* and *P. griseigena* to be *Ligula colymbi*. In her experiments the development of the coracidium in the egg took 5–6 days at 24°C. to 30°C. The coracidia swim freely in water for 35–40 hours. She obtained full development of procercoids in ten days in *Cyclops bicuspidatus*, *C. gracilis*, *C. oithonoides*, *C. serrulatus*, *C. viridis*, and *C. strenuus*. Cyclops are infective only for 3–4 days after procercoids reached their full development. The second intermediate hosts are small cyprinid fishes. The development in these fishes proceeds slowly and takes some months. C.R.

431—Zoologische Jahrbücher. Abteilung für Systematik, Ökologie und Geographie der Tiere.

a. VÖLK, J., 1950.—"Die Nematoden der Regenwürmer und aasbesuchenden Käfer." 79 (1/2), 1–70.
b. GERLACH, S. A., 1950.—"Die Nematoden-Gattung Microlaimus." 79 (1/2), 188–208.

(431a) Völk gives an account of the nematodes found associated with earthworms and carrion beetles in the vicinity of Erlangen, Germany. Consideration is given to their moisture requirements and their temperature relationships. The species and numbers of nematodes found and their percentage distribution among more than 500 earthworms belonging to seven different species are given. Similarly the species, numbers and percentage distribution of the nematodes found associated with 620 carrion beetles are tabulated. Their dispersal and food requirements were studied. The following new species are described and figured: *Rhabditis stammeri* n.sp., *R. cystilarva* n.sp., *R. plicata* n.sp., *R. maxima* n.sp., *R. wohlgemuthi* n.sp., *R. craspedocerca* n.sp., *R. dentifera* n.sp., *R. labiata* n.sp., *R. inermoides* n.sp., *R. oerleyi* n.sp., *Diploscapter lycostoma* n.sp., *Diplogaster linocerca* n.sp., *D. eurycephalus* n.sp., *D. rhabdoderma* n.sp., *D. rarus* n.sp., *D. stöckherti* n.sp., *Rhabditolaimus leptosoma* n.sp., *R. magnus* n.sp. T.G.

(431b) Gerlach has made a study of the various species belonging to the marine nematode genus *Microlaimus* and makes a valuable contribution to their taxonomy. The following species are described as new: *Microlaimus macrocirculus* n.sp., *M. punctulatus* n.sp., *M. parahonestus* n.sp.; *M. dentatus* Chitwood, 1937 becomes *M. chitwoodi* nom. nov., and *M. zosterae* Allgén, 1935 becomes *M. allgeni* nom. nov. T.G.

NON-PERIODICAL LITERATURE

432—ANTHONY, D. J., 1950.—" Diseases of the pig and its husbandry." London : Baillière, Tindall & Cox, 3rd edit., xi+309 pp., 17/6d.

This is a general text-book now in its third edition. [The chapter on diseases caused by animal parasites which deals with the worm parasites of the pig is marred by a number of misprints of the scientific terms and names.] R.T.L.

433—BELSCHNER, H.-G., 1950.—" Sheep management and diseases." Sydney & London : Angus & Robertson, x+718 pp.

To the sheep raising industry of Australia the internal parasites of sheep, described in chapter XXIII (pp. 547–607), cause grave economic loss but it is doubtful, in the author's opinion, if stock-owners realize the full extent of the harm done by these parasites not only from scouring, loss of condition and death but also from the lowering of vitality which renders lambs and weaners more liable to other diseases. R.T.L.

*434—BORCHERT, A., 1950.—" Die Leberegelseuche, Merkblätter für die hauptsächlichen Parasiten und Parasitengruppen." Leipzig : S. Hirzel.

*435—BORCHERT, A., 1950—" Merkblätter für die hauptsächlichsten Parasiten und Parasitengruppen Nr. 7. Parasitäre Kotuntersuchung bei den Haustieren." Leipzig : S. Hirzel, 21 pp., DM. 70.

436—CAIRNS, J. & THOMAS, C. A., 1950.—" Nematodes causing mushroom crop losses." Mushroom Science-1. Proceedings of the 1st International Conference on Scientific Aspects of Mushroom Growing, Peterborough, Northants, May 3–11, 1950, pp. 89–91.

The sources of nematode infection of mushroom houses are (i) the compost, (ii) the casing soils and (iii) the carry over of nematodes within the house itself. Fungicidal and insecticidal drenches on the compost are not effective. Cold formaldehyde on the casing soils gives poor results. Chloropicrin and methyl bromide show promise if formulae and methods of application can be improved. Fumigation of empty houses with burning sulphur and with methyl bromide do not kill the nematodes. Steam heat is the most effective method, provided sufficient heat reaches all parts of the compost, casing soil and house structure. Damage by the nematodes is due partly to their feeding upon the mushroom hyphae but may also be partly attributable to a toxaemia from the injection by the worms of a digestive enzyme and partly to the escape of cytoplasm from the tiny punctures and the admission of decay organisms. R.T.L.

437—FRANZ, H., 1950.—" Bodenzoologie als Grundlage der Bodenpflege. Mit besonderer Berücksichtigung der Bodenfauna in den Ostalpen und im Donaubecken." Berlin : Akademie-Verlag, x+316 pp., DM. 32.

438—GLÄSSER, K., HUPKA, E. & WETZEL, R., 1950.—" Die Krankheiten des Schweines." Hanover : Verlag M. & H. Schaper, 5th edit., xii + 481 pp., DM. 27.

439—MANSON-BAHR, P. H., 1950.—" Manson's tropical diseases. A manual of the diseases of warm climates." London : Cassell & Co., Ltd., 13th edit., xiv + 1136 pp., 45/-.

*440—MANTER, H. W., 1950.—" A laboratory manual in animal parasitology. With special reference to the animal parasites of man." Minneapolis : Burgess Publishing Co., i + 121 pp., $2.25. [Revised.]

441—SAWITZ, W. G., 1950.—" Medical parasitology." Philadelphia : The Blakiston Co., xii + 296 pp., $4.25.

This text-book summarizes succinctly (pp. 61–138) the main facts concerning the morphology, classification, life-cycle, diagnosis and prevention of the helminths of man and deals with their treatment in a separate chapter (pp. 225–246). There is a useful vocabulary of technical terms (pp. 262–284). R.T.L.